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THE PLAYER IN THE SNOW

BY CHARLES LIVINGSTON BULL

Drawings by the Author

A FINE gray mist rose from the brawling, tumbling waters of the little river, filling the rocky, snow-covered gorge and frosting the green branches of the rugged little firs and spruces which clung to the steep slopes wherever they could gain root hold. The first light of morning dimly penetrated the mist cloud, suffusing the valley with soft pearl and opal tints through which the gray-green of the lichen covered rocks and evergreens seemed but faintly deeper glints of the same hues.

Down the bank of the river, leaping from snow covered rock to rock, faintly distinguishable through the mist, came a most beautiful creature. Soft pearly gray, fading to snow white on the under parts, its deep warm fur spotted and blotched with darker gray, big furry paws, small round head, and long tail like a great fur boa ringed with dark gray and white, it seemed a part of the mist imbued with life and form and movement.

It was a big snow leopard, or ounce, as it is sometimes called, one of the loveliest creatures in all that land of splendid beasts and birds, Central Asia. Away at the northwest of Mongolia where the Saiansk, Altai and Thian Shan mountains form the boundary between China and Siberia, and the streams springing from the snows of the mountains flow north clear across the entire breadth of Siberia to the Arctic Ocean, these beautiful creatures find their dens in caves among the rocky valleys and ravines at the foot of the mountain ranges.

Coming to the water's edge, the ounce crouched and drank, daintily lapping up the icy water; then, his thirst satisfied, he sat up and licked his paws and washed his face after the manner of a big cat—which he was—stopping occasionally to listen and to look sharply about with his great, keen, bluish-gray eyes.

After completing his toilet, the big cat yawned and stretched and sauntering leisurely to a small tree reached up and dug and scratched at the bark, tearing away with first one big paw and then

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the other. Tiring of this exercise, he started down the valley through the mist. He had passed most of the night sleeping in a snug retreat under a big flat, overhanging rock well screened behind the sheltering matted branches of a thick clump of young firs, and, having been unsuccessful in his hunting the evening before, was eager for breakfast.

Farther down the valley narrowed and deepened and the stream tumbled down among the rocks in rapids and little cascades. The trees gradually grew bigger and the mountains, towering on both sides, were steeper and came closer together. The leopard saw nothing stirring for some time till the mist arose and hung in leaden banks about the upper slopes of the mountains. Then, rounding a sharp turn of the stream, his keen eyes caught a movement in the branches of a great spruce hanging over the water from the opposite bank, and he saw one of the big gray Siberian squirrels, the fur of which is so much used in commerce, run out on a long branch closely followed by a sable.

The squirrel crazed with fear ran to the tip of the branch and leaped wildly out into midair and, with legs sprawled wide apart, sailed down, struck the water with a splash, and was quickly swept downstream by the icy current. The sable watched it fall, then turned and sprang down the trunk like a flash and darted along the bank, eagerly watching its intended prey as it struggled feebly in the chill waters. The ounce followed along down the bank on his side, looking for a chance to cross or for the squirrel to float near enough the bank for him to reach.

The sable, intently watching the squirrel, paid no heed to the big cat beyond a mere glance and silent snarl, and for some time the two beautiful killers—cat and weasel—followed the game without advantage to either side. Once the squirrel, chilled near to insensibility, was washed against the bank on the sable's side, but the bank at that point was a perpendicular, smooth, rock wall five feet high, and the sable, though leaning far over, could not reach its prey and had to see it float out into midstream once more.

The squirrel's struggles soon ceased, and it slowly sank, though borne up by the current for some distance. When it had entirely disappeared the sable and the cat sat watching the spot for a few minutes, then the sable turned back and disappeared under the branches of a great spruce.

The ounce, finding no opportunity to cross, stood for a little looking for the sable, then with a snarl of disgust turned away up the mountainside.

Soon after, coming around the upthrust roots of a fallen tree trunk, his keen nose caught a faint scent and creeping forward he peered over the edge of a projecting snow-covered ledge of rock. Not more than fifteen feet below him was a little flock of pheasants hunting for seeds and dormant insects among the dead leaves and mosses in a sheltered nook protected from the snow by the shelf upon which the ounce was crouching.

After watching them for a few minutes, he withdrew quietly and, going some distance back, descended to the same level as that upon which were the birds and, creeping softly behind a small fir, darted around it and sprang into the flock, striking right and left with his big, well-armed forepaws.

The birds rose, with a loud whirring of wings and excited cackling, and, bursting out of the shelter, went whizzing away down among the tree trunks. One of them, however, lost most of the feathers of his long tail and another was knocked spinning against the rock and was instantly clutched and soon eaten.

A little later, when there was nothing left of the bird save a few feathers, the cat strolled out of the sheltered corner and climbed back up to the shelf from which he had seen the pheasants, and once more made an elaborate toilet. The mist had completely cleared and, although there was no sunshine, the air was warmer and the big cat, lazily content, stretched himself out on the ledge and rolled over on his back, wallowing in the snow in keen enjoyment. Then, bounding to his feet he crouched a moment, raced across the ledge, and leaped high in the air, slapping at a red leaf swinging in the slight breeze at least

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eight feet from the ground. Clutching it in both paws, he rolled over and over in ecstacy, playing with it as a kitten plays with a ball.

Suddenly springing to his feet, he darted up the trunk of a great spruce for twenty or thirty feet, then backed down again more slowly, turning when about ten feet from the ground and jumping clear the rest of the way. As he landed he raced back to the leaf, struck at it in passing, whirled back to it, and again tossed it in the air, playing with the greatest gusto.

His lithe form flashing about over the snow with the background of low hung evergreens and dark blue-gray, lichen-covered rocks made a most beautiful and entrancing picture; every pose and curve of his supple body was the very extreme of grace and beauty and the somberness of the dark forested mountainside seemed to accentuate the charm of his keen, alert playfulness. He seemed the very embodiment of joyousness, splendidly alive and awake.

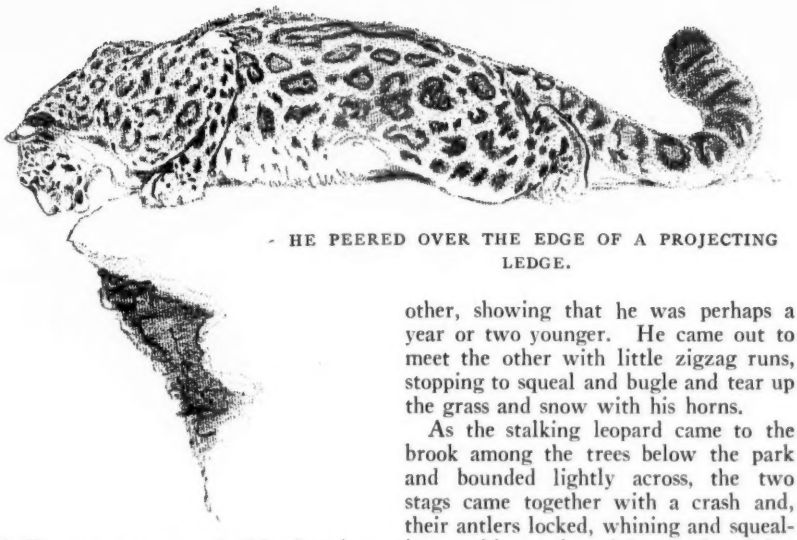
After a little the red leaf was worn to dust, and, tiring of his sport, the great cat once more started away up the mountain. Coming around a shoulder of rock out of sound of the noisy, brawling little river far below, his keen ear caught a high, mellow sound from some distance above, ringing down the valley like the note of a bugle.

Listening for a moment, he heard it peal forth again and, getting the direction, darted silently up among the rocks and trees. Skirting the face of an enormous wall of rock, he came over a little ridge upon a small open mountain meadow or park dotted with yellow bunch-grass clumps upthrust through the snow, which had not yet attained any great depth, as it was but the beginning of winter. In the center of the little park was a small pond formed by a brook which came tumbling down from the everlasting snows high above and, running through the meadow, fell down the steep mountainside below.

As he came over the ridge among the tree trunks, the leopard heard once more the clear, loud, bugling call from among the trees just across and above the park, and from far away up on the mountain, like an echo, came an answering call. Then, as the cat was about to start across the park, a sound like a whining grunt caught his ear and glancing around he saw a sight that made him change his mind.

Below him near the foot of the little meadow on the other side of the frozen pond he saw a big doe wapiti, and almost instantly his keen eyes made out another and then three more, two of which were much smaller than the others, fawns of the last season. They were all watching the point from which the bugle came and even as they watched a great wapiti stag stepped proudly forth from the shadow of the trees, threw up his head and bellowed forth his loud note of defiance, harsher and less bugle-like than it had sounded at a distance. Again the

THE CAT SAT WATCHING THE SPOT FOR A FEW MOMENTS.



HE PEERED OVER THE EDGE OF A PROJECTING LEDGE.

challenge was answered, this time from a point much nearer than before.

These were the great Altai wapiti, hardly distinguishable from the elk of the western mountains of America, perhaps a trifle more compact in build and with slightly shorter necks and bodies they were, if anything, even handsomer than their American allies.

Turning back among the trees the cat crept down along the edge of the open park, intending to stalk one of the fawns. The big stag trotted down toward the does, stopping to challenge every few minutes, his thick neck bristling with anger, and ever the answer sounded nearer and nearer. Just as the leopard came to the foot of the park the stag joined the little band of does and fawns and a moment later, with a splendid burst of music, a second stag bounded into the open near where the other had come into sight.

The first elk turned and trotted back about half way to where the new comer stood wrinkling his nose, whining and gritting his teeth. Coming to a small tree he fell to thrashing it with his splendid antlers, pushing and banging away, apparently working himself up to the point of battle. The second elk was slightly larger than the first, though his great branching antlers had not yet reached the development of those of the other, showing that he was perhaps a year or two younger. He came out to meet the other with little zigzag runs, stopping to squeal and bugle and tear up the grass and snow with his horns.

As the stalking leopard came to the brook among the trees below the park and bounded lightly across, the two stags came together with a crash and, their antlers locked, whining and squealing, pushing and straining, each striving for the mastery, they filled the glade with uproar. The leopard, quick to take advantage of the racket, darted through the forest toward the does, and just as the struggling stags sprang apart for a moment, the cat bounded into the midst of the little band and upon the side and flank of one of the fawns, knocking it clean off its feet at the first rush and bearing it to the ground with a crash.

Paying no heed to the rest of the stampeding band, he quickly dislocated the neck of his prey and, ripping a hole in its throat, fell to his breakfast with great gusto. The other fawns and the does fled wildly across the park, followed more slowly by the two stags which seemed half inclined to dispute the right of the leopard to his prey. A little later, as the big cat crouched feasting, a pair of eagles sailed down from the crags high above and circled out over the park, swinging round and round, sweeping nearer and nearer, screaming and threatening.

The leopard paid little heed to their threats and they did not venture quite within reach of his lightning bounds, preferring to wait till his appetite should be satisfied and he should leave his prey for them.

A little later, as he feasted greedily, he was startled to hear a deep

HE RACED BACK TO THE LEAF, STRUCK AT IT IN PASSING, WHIRLED BACK TO IT, AND AGAIN TOSSED IT IN THE AIR, PLAYING WITH THE GREATEST GUSTO.

growling and heavy footfalls rapidly approaching from behind. Whirling around, he faced a great yellow bear which had also heard the notes of the wapiti, though from a much greater distance back in the forest on the other side of the park. It was the hairy eared or isabelline bear, a creature nearly as large as a grizzly, and though fat and about ready to go into its den to sleep for the winter, it was surly and of no mind to brook interference with its hunting.

The leopard faced it, snarling and growling, but the big bear was not to be daunted and came steadily though more slowly forward, shaking its great shaggy head from side to side and growling deep and harsh. When it came within a few yards it rose upon its hind feet and stood for a moment, watching the leopard standing over his prey, his beautiful fur on end and his great tail puffed out like that of an angry cat, growling and spitting.

Dropping again on all fours, the bear turned to one side and walked slowly around the leopard and the dead fawn, gradually drawing closer and closer; as he went the leopard turned, always facing him.

This manner of attack soon got on the nerves of the leopard and he greatly resented it, darting a few steps toward his much larger antagonist most threateningly, then as the big bear rearing up on his hind feet would call his bluff, he would again retreat to his prey. Finally, coming within a dozen feet, the bear suddenly charged. The leopard bounded lightly to one side and the bear, satisfied with having driven the cat from his prey, fell to tearing at the fawn, keeping a sharp eye on its owner.

The leopard watched the big bear for a while, then, not quite daring to attack so redoubtable an antagonist, turned away into the forest and resumed his hunting. Wise with the wisdom of his tribe, he scorned the glory of the forlorn hope.

HORSES AND COWS AT TWIN-FLOWER

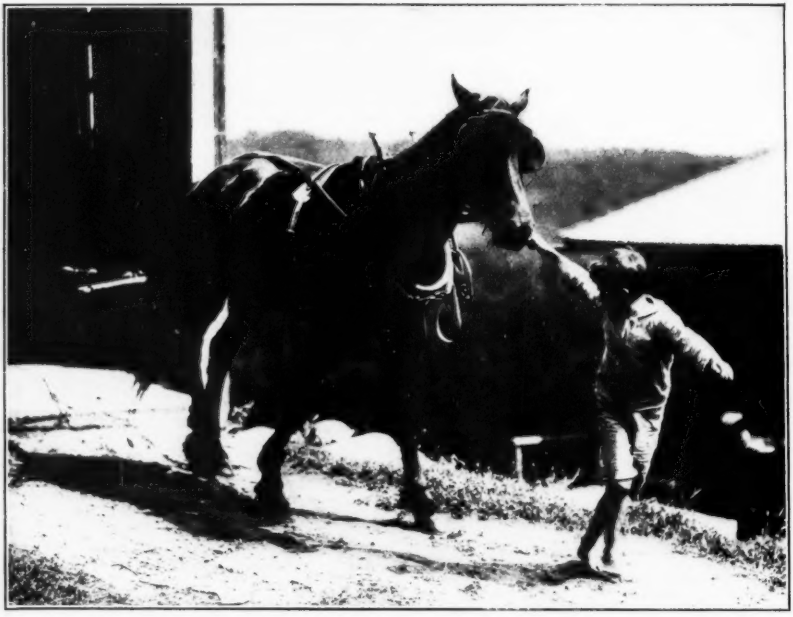
BY HELEN DODD

Photographs by Julian A. Dimock

FROM the busy office and the luxury of the city the Rebel and I came to these hills where had lived my grandfather and his father and his father's father before him. We came with the determination to make from the ground itself a living for ourselves and our children. Our farm was rich in tradition but had no fences. The tillage land was dried out, the apple trees were dying, the house and barn were bare and inconvenient, yet through all the neglect we could see the former glory. The lilacs lost among the burdocks, the bachelor's buttons hidden by blackberry brambles, the big grove of maples above the fields, the wide spread of the pastures called upon us to make the old place blossom again.

"Make a livin'? O' course y'u c'n always find enough to *live* on off a farm, but y'u can't make money, 'nless y'u're a sight smarter 'n the rest o' us," said our new neighbor to us on our arrival.

Later he watched with interest our first plowing. I drove the horses and the Rebel held the plow. We turned out huge stones and tore out solid chunks of briar roots and sod, and in our first enthusiasm did a better job than in later years. Our neighbor told the villagers that we had rolled more stones into the wall than our predecessors had moved in forty years, and he said to us:



THE BIG LITTLE BOY LEADS THE HORSE ATTACHED TO THE HAY FORK.

"Oh, if y'u're goin' to *work*, y'u c'n make it pay, but y'u won't get rich."

Our first effort was to restore the fertility of the land. Our neighbors told us that run-out land could only be renewed by keeping plenty of cattle on it, that the fields might be heavily manured. So the Rebel and I accepted their theory and began to gather a herd from the neighborhood.

Polly, our first cow, was endeared to us as the foster-mother of our boys. If our later investments in cattle had been as fortunate as this initial one, our story might have been different. In the spring the fine pasture, famous for making sweet butter, encouraged us to buy more cows. That summer, when a neighbor asked us: "How many cows y' milkin' now?" we answered: "Seven."

He gave us much pleasure with his approving:

"Sho'! That's quite a dairy."

We could not find for sale, near us, as many cows of Polly's quality as we thought we needed and so we made questionable purchases of young cows and heifers. One neighbor assured us that "a herd of cows" averaged eight to ten dollars a month at the creamery. We believed him and figured up how many cows we must keep to provide what we thought money enough to live on.

The Rebel and I had been accustomed to handling animals, but we had never been alone responsible for their well-being. We studied dairying literature and learned from the State experiment station and successful farmers what to grow and how to feed our cows. Finding that we needed more hay we followed the neighborhood practice and bought the adjoining farm, instead of only enough acres to feed the animals.

The books and bulletins we could find did not tell us how many animals one man could hope to care for alone, nor how many our farm ought to be able to support, nor even the cost for this region. I doubt if any one in the locality had at that time the vaguest notion of the cost of keeping a cow for the year.

In the second year we bought a cream separator, butter-making tools, and a silo. Silo building was then in its in-

FROM THE OFFICE AND THE CITY, THE REBEL AND I CAME TO THESE HILLS.

fancy and the information available led us into buying one too large for our needs.

Filling a silo is a serious problem in a country where there are too few men and a season so short that everybody's corn must be harvested at once or be ruined by the frost. The Rebel and I drove miles looking for a corn-cutting outfit and then, in desperation, bought our own cutter. Then we scoured the country for a horsepower to run it.

When we got it in operation we discovered that we didn't have men enough to keep it going. So while a good neighbor was preparing dinner for me, I was driving around the country looking for more men, who proved "skurser than hen's teeth." Finally I brought some back with me and we two women fed fourteen men that day.

When the village creamery proved unfair we made our own butter and marketed it in a near-by town, for we were too far away to reach the high prices of a special market in the city, and the local people were not willing to pay us even the creamery price.

Meanwhile we had sold the cows that proved the most unprofitable and had bought a few more that were for sale in the neighborhood. Millie and her calf we sold "on the wing" because the Rebel and I together could not catch them, although we chased them all around the pasture until we were tired out and very cross. How the purchaser caught them I do not know to this day. We had hoped that by raising the heifer calves from our best cows we could build up a more productive herd, but in four years of twenty-five calves only three were heifers!

Dairying proved "hard sledding," but we believed that our expenditures of effort and capital were necessary to bring up the land. We had arrived at the English spirit of sacrifice "for the good of the place." When, however, there came a year of drouth, with a failing of the water supply and a scarcity of fodder, the load seemed too heavy. At this time also, we began to weigh every cow's milk night and morning and keep comprehensive records. We discovered that our dairy was not even paying its

way, so we sold all our stock except a very few of our most productive cows.

Through all the difficulties that beset us in learning these first lessons in farm economics and country living we had had keenest enjoyment. From planting potatoes to harvesting hay, the Rebel and I had worked together. Out of the earth itself had come the strength and renewed courage that we needed. We took delight in the landscape that we owned. The daily walks after the cows were through our own fields, the fields that we plowed and cultivated and harvested, the fields that fed us and our animals. They were ours—ours and our boys'. We were kin to the hills.

One corn-cutting time I went rather late for the cows. As I entered the sugar woods I had the uncanny feeling that somebody or something was near me. From looking up the hill and along the road for the cows whose bell I heard, I glanced down below into the deep woods. There, in a little clearing among the close-growing young maples and beeches, stood three deer—one a big buck with wide-spreading antlers. The three stood motionless, watching me. I was so near them that the soft texture of their hair and the dark splendor of their eyes stood out against the cool smoothness of the green leaves.

We had other furry neighbors in the pasture. We found little foxes in a hole way up on the far side of the ridge. They boxed and ran and barked like puppies, occasionally looking up at us but apparently not at all afraid. When we walked toward them, they all sat still and watched us, until we were quite near. I dropped bites of apple down and the little creatures fought for them. Villagers thought that we ought to "dig 'em out," but we preferred to keep our foxes tame.

At this stage of our dairying we had learned that a herd of native stock could not be made to pay and that we must find higher grade animals. Railroad trips to several of the noted herds in the State made us acquainted with the best stock available and we could intelligently select a new lot with which to begin again.

At the farm from which we finally purchased, the owner himself introduced us to his family of cows. He never passed within reach of one of the beautiful fawn-colored creatures without stroking her. In perspective the long line showed that each animal conformed to the best type of dairy cow. Such uniformity we had not found elsewhere and we felt that cows from such a herd would put us generations ahead in developing a herd of our own.

The pedigrees of the animals filled us with growing enthusiasm. We found that many of the famous record-making Jerseys were included in the trees, and a cow with distinguished ancestry is much more likely to found a worthy line than one with merely an individual record of high production.

The cows were stalled in unimpressive stables and their feeding arrangements and general surroundings were about the same as on our farm. This encouraged us to think that we could handle them successfully. Unless we could give as good or better care and housing and as skilful management, it would have been folly to take to our old barn expensive beauties used to marble halls.

The Rebel left the farm on foot, with a heifer and four cows following him. Railroads were expensive and left too many gaps in the journey to make them worth while, so at the rate of two miles an hour the procession covered the forty miles over the hills. It took three days, through the big drifts of snow and the bitter cold. The loyalty of the dumb creatures that had patiently followed for all the long trip gave the Rebel a sense of comradeship with the new herd that the old one could never have invoked, for, as he said, "These are ladies."

One morning, about a month later, while the mercury stood at four below zero, the Rebel and I set out on a one-horse woodsled to bring home a young bull calf. His registered name combined that of three Jersey celebrities, but to us he was only "Pogis of Twinflower." The bran sack recommended by his breeder would not hold him, and we shifted our seat to the very front of the sled so as to make room for the calf to stand behind us. He was secured by

FROM PLANTING POTATOES TO HARVESTING HAY, THE REBEL AND I HAD WORKED TOGETHER.

guy lines to stakes at either side and was covered with a horse blanket. As we drove out of the barn one of the men called to me:

"Look out for his horns. I'm afraid he'll hurt you."

But so far from hurting me, he was glad of the additional shelter of the fur coat I wore and cuddled his nose under my arm. Thus we brought Pogis of Twin-flower home and he, too, entered into our affections.

There were now seven cows, the best three from the old herd and the four new Jerseys. However, Trilby, the best of our old herd, died as the result of an accident the first day that they went out to the pasture, and we sold Bessie because she fell so far below the standard set by the new cows, while Polly's milk was entirely reserved for the house. Thus our revenue-producing herd was reduced to the four Jerseys. The creamery returns for this year were somewhat larger than in the years when we were milking ten, or even twelve, of the native stock, and this despite the lessened yield following their long, cold walk to our farm.

We had learned much about feeding and did not repeat our former error of using high cost grain to produce butter that was then bringing too low a price to return our expenditure. We fed chiefly rough forage crops raised on our own land. By this time we had brought our dairy through its vicissitudes and had proved that we could make it pay, largely through a better yield than the average of the countryside, but we did not consider that it paid for the work and responsibility. Although it was paying its own way, it was not maintaining the farm.

It was then that we began to discover how much it costs to bring up a run-down place. The feed of the animals not producing revenue counts heavily. A team of work horses is the first necessity. An extra errand horse eats his full quota of hay and a little grain but seems to be a necessity on the place. The

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THE TWO LITTLE BOYS ARE NOW OLD ENOUGH TO GO TO THE BIG PASTURE FOR THE FRIENDLY COW AND HER DAUGHTERS.

young bull and heifers consume much fodder.

A team of horses could have done their share of the work for a larger herd of cows, which in turn would have produced a larger revenue and under wise management would have maintained the whole place even at the prevailing low price for cream. But we did not care to undertake the additional work of gathering fodder and feeding so many animals. The Rebel had not the strength to do it without help, and even if we had been sure of its money success we would not have cared to hire help all the year around, for we had come to the country to enjoy the peace and quiet of living by ourselves. So we gave up dairying and leased the upper farm with the cows to prevent that, too, from running down.

Not until the round of chores had recurred for several winters did we realize what a burden we had carried. Morning and night, when the Rebel had opened the barn door he had been greeted by whinnies from the horses, low patient moos from the cows, loud bellows from the yearlings, and the deep roar from the bull, grunts from one pig and squeals from the others, and even an inquiring meow from one of the cats. It was all very well as a personal greeting, but it was very different when he realized that everyone of those animals was hungry, and that each one who called would grow more impatient until fed. It takes a long time for one man to get around just with hay, even if his mind is not disturbed by a diminishing, insufficient supply.

The milking is an arduous task. It takes a milker, born and bred to the job, an hour to milk a dozen cows, but it often took the Rebel an hour to milk eight of the reluctant, evil-minded native heifers. Even our old friend Polly had her peculiarities. If the Rebel too suddenly changed the position of his hands while milking, her foot was instantly in the pail. A neighbor who once saw the performance said, as the Rebel threw away the milk: "Why, it'll all strain out!"

Giving a native heifer her first instruction in milking is always an irritating circus to both parties. Highbred cattle pay if for no other reason than that their intelligence and gentleness save a lot of bad temper. Even a well-bred, well-behaved old cow has an anxious moment each year when she questions whether she will yield to the man who has always milked her or save herself for that tiny creature that has just called lustily from its pen.

Later there is an anxious moment for the Rebel when he goes to teach that calf to drink. Most men swear at this stage. I don't blame them as much as I did, for I wanted to say things myself when I tried it. I did say things about petticoats when the calf that had followed my milky fingers into the pail tried to put the milk supply as high as he was used to finding it.

After the cows are milked, the milk run through the separator, and the skim milk fed to the calves, every animal in the stable has to be watered. Some of the creatures drink fast and get through, others drink slowly, some drink in groups, others will only drink alone and take all the time there is. When drinks have been served, all the cattle have silage. Forty pounds, the books tell us, must be eaten by each milking cow every day, and the young animals in proportion to their size. When this stuff has been dug out of the tightly packed silo, shoveled into a basket, and the basketfuls emptied into each manger you have finished one chore.

Every other day there is a trip to the creamery, every day there are countless little jobs that take any spare time and in season, the big farming jobs demand all the daylight hours, pushing the back-breaking silage feeding job into the night when a tired man ought to be in bed. Small wonder that we, who did not wish to hire outside help, gave up the idea of keeping a large herd!

We thought of our first cows merely as sources of fertilizer, a market for our farm crops, and in time, perhaps, a source of revenue. Our second smaller herd received a less diffused interest, our accumulating dairy knowledge and a certain consideration, and returned us a larger revenue. In giving up dairying for profit, paradoxical as it may seem, we have achieved a greater success. Our one cow now yields better than when she belonged in a herd, and on more economical feeding, because she receives all the care she should, her choice of clover hay, and the sympathetic consideration due any mother.

Linnea does more than make a pound of butter a day:

> "She gives me cream with all her might,
> To eat with apple-tart."

When accident or convenience nowadays make it necessary for me to feed and water the animals I am glad that we have graduated from the dairy idea. It is easy for "the little boys in their rubber boots" to throw down enough hay from the mow for the present family—Linnea, our best-beloved Jersey; Hepatica, her daughter grown though only two years old; Mary Cary, the next daughter; and Peoninny, the baby calf; Kit, Nell, and Brownie, the horses; Barney and Mrs. McGee, the pigs.

The two little boys are now old enough to go to the big pasture for the friendly cow and her daughters. The daily trip is as full of romance for them as it once was for me. Berries grow by the walls, partridges run in the woods, deer still travel through the pasture, and one year an old woodchuck burrowed into the sugar house. Once they found "a little boy woodchuck" in the road close by. "We talked to him and he wasn't afraid of us!"

Our experience with high bred cows led us to buy better horses. When we needed a new work team we decided not to depend upon what was offered for sale in the open market, but to go straight to the places where horses were bred, reared, and trained by people who knew how. Correspondence carried our inquiries into several States, but at last, from the farthest corner of our own State, came news of what we wanted.

On their arrival these black Percheron ladies suggested to our neighbors a scale of farming with which they had not previously credited us and set us up in local estimation, for social position, in this region, depends more on horses than on

IN THE SPRING THE FINE PASTURE, FAMOUS FOR MAKING SWEET BUTTER, ENCOURAGED US TO BUY MORE COWS.

THE REBEL DECLARES THAT THE NEW TEAM IS WORTH WHILE FOR THE FUN I GET OUT OF THEM.

clothes or behavior. The Rebel declares that the new team is worth while for the fun I get out of them, if for no other reason. With the disposal of the rough Western horses that we had used for years, we saw the last of irritating animals.

We now propose to keep several *small* groups of animals—one cow and her youngsters, the horses, a few sheep, chickens, and two or three pigs whose piglets gather clover for themselves in the summer and add to the revenue in the fall. These animals will be the means of transmuting the crops of the farm into food we can eat and products we can sell or exchange without exhausting the soil. As we work to attain the proper balance, wherein the farm feeds the animals, the animals feed us, and we and the animals feed the farm, we find a most satisfying unity of life.

SADDLE AND CAMP IN THE ROCKIES

BY DILLON WALLACE

Illustrated with Photographs

WILD LIFE IN COLORADO

A LITTLE more than three-score years ago the Rocky Mountains meant little more to us than a mighty, almost impassable rampart standing between the vast plains to the eastward and an unknown, mysterious waste of wilderness and desert to the westward. All that territory west of the Mississippi River was practically untenanted then, save by nomadic tribes of more or less warlike Indians, a few suntanned, adventurous trappers, and the plentiful wild animals, wild fowl, and fish which supplied the Indian and trapper with the necessaries of life. No region in the world was better stocked with game animals than our West was at that time.

It was the discovery of gold that drew men in numbers across the barren stretches and into the very heart of what was then the Great American Desert. Men will dare thirst, famine, cold, and death for gold. Following the gold hunter came the home seeker, and our New West was born, figuratively speaking, with a gold spoon in its mouth.

Little more than half a century ago the great city of Denver had her beginning in a mining camp. I recall with what intense interest I read, when a small boy, Albert D. Richardson's narrative of a stage coach journey into the far West, in company with Horace Greeley, in 1859. This narrative was perhaps the first book I ever read. Its descriptions impressed upon my childish imagination a picture I have always retained of the conditions described, and it spread around the Rocky Mountain region a halo of romance that has never quite faded from my fancy's vision. Particularly was this true of Denver and the environments of Pike's Peak, and a visit to the Denver of to-day is always a shock to my sensibilities.

"Making governments and building towns," says Richardson, "are the natural employments of the migratory Yankee. He takes to them as instinctively as a young duck to water. Congregate a hundred Americans anywhere beyond the settlements, and they immediately lay out a city, frame a State constitution, and apply for admission to the Union, while twenty-five of them become candidates for the United States Senate.

"True to this instinct the people of this unfledged community, nominally in Kansas,* but practically as far from government and civilization as Central Africa, were already making a State constitution; and months before they had laid out Denver City.

"It was a most forlorn and desolate looking metropolis. If my memory is faithful, there were five women in the whole gold region; and the appearance of a bonnet in the street was the signal for the entire population to run to the cabin doors and gaze upon its wearer as at any other natural curiosity.

"We took lodgings at the Denver House. True to the natural instinct, the occupants of its great drinking and gambling saloon demanded a speech. On one side the tipplers at the bar silently sipped their grog; on the other the gamblers respectfully suspended the shuffling of cards and the counting of money from their huge piles of coin, while Mr. Greeley, standing between

*This was before Colorado had been organized.

them, made a strong anti-drinking and anti-gambling address, which was received with perfect good humor."

Richardson describes Denver as containing less than three hundred buildings, nearly all of hewn pine logs. One-third were abandoned unfinished and roofless, for the early hints of great gold deposits, which had inspired the first settlers to locate here, had not yet materialized. "There were few glass windows, or doors, and but two or three board floors, and the occupants of the cabins lived upon the native earth, hard, smooth, and clean-swept. Chairs were a glory yet to come. Town lots and log houses were bartered for revolvers, or sold for ten or twenty dollars." That was Denver only fifty years ago!

Passing of the Old West

The wild life has been swept to destruction before the advance of civilization; the Indian has disappeared from the plains, and cities stand where he hunted the countless buffalo and antelope; the stage coach by which Richardson and Greeley traveled so tediously over plain and mountain pass has given way to the fast and luxurious express train; Denver has, in reality, become a metropolis, the center of a rich and extensive empire. The 1910 census, showing the official count of Denver's population, is not at hand as I write, but it is safe to venture that it will not fall far short of 170,000; and as the capital of one of our great States, with immense industrial and commercial interests, it has taken its place among the leading cities of the United States and the most important of all the Rocky Mountain country.

These citations are made merely to contrast the West of our childhood with the West of to-day. It is hard for the average Easterner to realize the rapid and miraculous development of our Western country. He has not yet awakened to the fact that the time has come when the tail is wagging the dog, which has a good deal to do with the soaring of food-stuff prices to war-time records; the average Easterner is a provincial, and the typical New York City man is the most pronounced provincial in the country, content in his belief that New York is the United States.

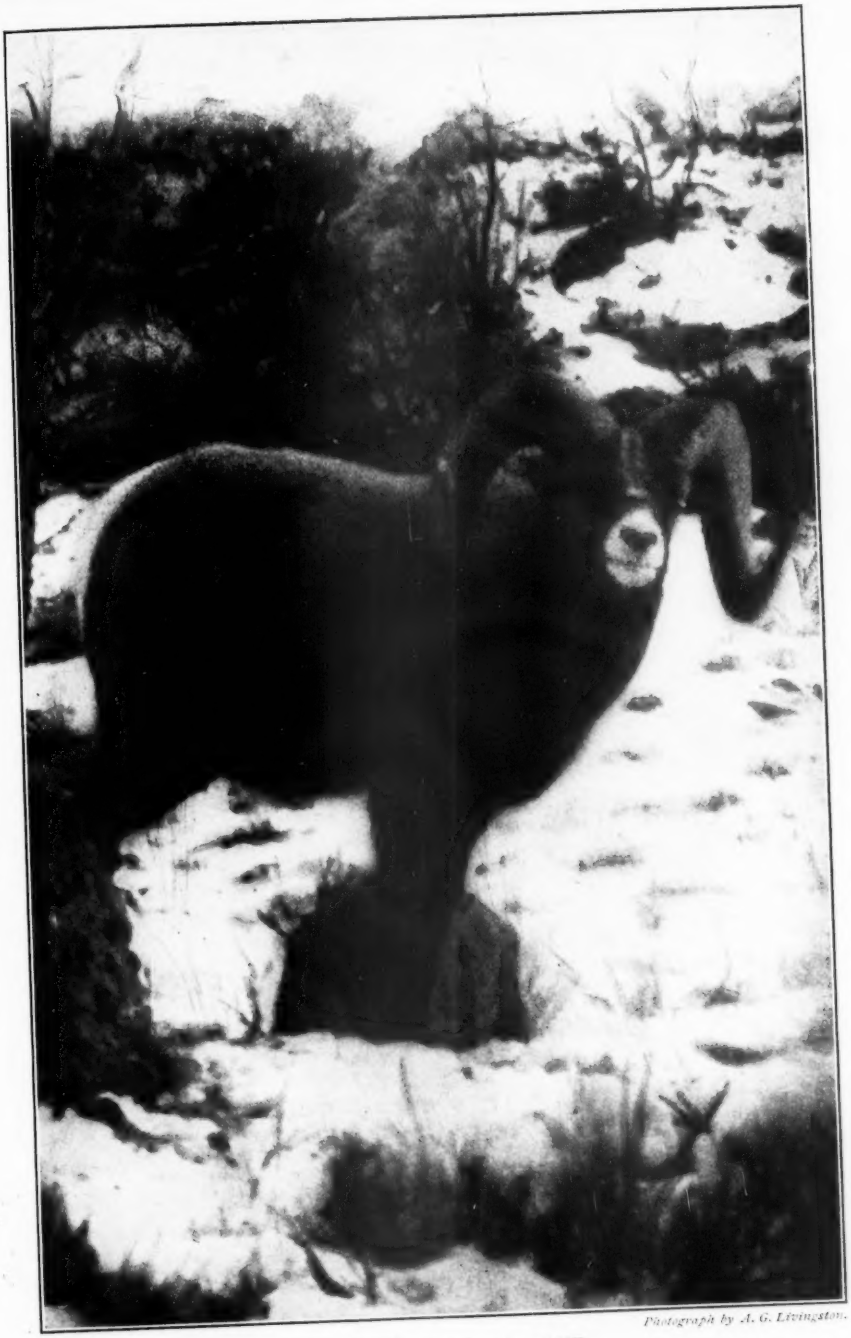
The next decade will see other miracles wrought in this new land of ours, and the disappearance, probably, of the last semblance of a frontier, save in rugged stretches, where lands are not adapted to agricultural development, or are too cold for the maturing of crops, or those reaches of sandy desert incapable of irrigation. These irreclaimable tracts we may be thankful are extensive enough to insure us for all time a permanent wilderness and playground—an absolute necessity to the healthful life of any people.

It was to be expected that civilization would displace the wild game in which our whole country was once so rich; it was not to be expected, however, that the game would be exterminated. But that is what has been done with some species, and others are fast approaching it.

This is the day of conservation, but who heard of any well-defined effort at conservation twenty or even ten years ago? We believed that our forests were limitless, and placed no value on our game as a national resource. Lumbermen were permitted to slash down the forests, without regard to future supply of timber, and few gave the game more than a passing thought. Yet both are valuable national resources.

The White Mountain region of Arizona, which I traversed on horseback, is an ideal summer and winter range for elk, and formerly sustained great herds of them. Of these herds not one individual representative remains. My trail carried me over plains where a few years ago thousands of antelope roamed. I saw but six. These references are to unreclaimed, unsettled regions.

The wild game with which our country was once so lavishly supplied was no small factor in our nation's building. It is probable that, had it not been for this reserve supply of food which sustained the pioneer in his long journey into the wilderness and kept him from starvation until the soil produced his living, many sections which are now rich agricultural centers would still be barren desert. It is certain that development would



Photograph by A. G. Livingston.

AMERICA'S BEST BIG GAME.

This plate is made from an enlargement of a small negative. The original photograph was the fruit of many days' tireless stalking.

have been greatly retarded. Those people—the pioneers—recognized the value of this resource, and rarely killed beyond their needs, or wasted what they secured. But close behind them came the men who slaughtered, sometimes for hides, sometimes for no other reason than an insatiable desire to kill God's creatures. Both left the flesh unutilized.

It was only in recent years, as I have said, that our Federal and some of our State governments took cognizance of the fact that wild game animals were of economic value and might well be reckoned among our national resources. In an age and country where the accumulation of wealth is the first consideration of the people, nothing but economic or money value would appeal to legislators. Sentiment alone would never lead to any effort on their part to protect or perpetuate the wild things of the wilderness and the plains.

It was necessary to show them that deer, elk, mountain sheep, and other game animals possess intrinsic value. Hardly yet has the fact been brought home in its full force to the legislators of many of our states that wild tracts of country not capable of agricultural development, or not at present under cultivation, may support game animals that would be to their State of the same relative value as cattle to the ranchman. The trouble with some of our legislators is that they are sports rather than sportsmen.

In this connection three questions interested me as I rode on horseback through the country: The adequacy of game laws; the administration of the laws; and the amount of game still remaining. In this and future articles I shall have something to say in reference to these questions, based upon personal observation and intercourse with hunters and guides.

While my leg-weary horses were resting at Draper, Utah, I determined upon a side trip, by rail, to northwestern Colorado, to meet some of the native guides and hunters with whom I had corresponded, and on the ground learn as much as possible in the brief time at my disposal of the game conditions there. The section to which I refer lies north of the railroad and west of the Front and Medicine Bow ranges.

While Colorado was at one time one of the best stocked game States in the country, it may be said to-day that this is the only section of the State where the sportsman, in search of big game, may go with reasonable assurance of securing the trophies sought, and where the angler may make his casts without danger of too much crowding by other anglers; even here he must push well back from the railroad to gain elbow room.

Twenty-four hours by train carried me from Salt Lake City to Denver, and another eleven hours from Denver to Steamboat Springs, in Routt County.

Over the Mountains from Denver

The latter is one of the most picturesque and thrilling railway trips in the world. The train leaves Denver, at an altitude of 5,170 feet, and at once begins the ascent of the continental divide. Up and up it climbs, doubling and redoubling upon itself, in and out of innumerable small tunnels, skirting precipitous walls, past Nile-green lakes nestling in hollows amid the fir clad mountains, always presenting wide views entrancing beyond the grasp of imagination, until, at the end of eighteen miles timber line has been passed, and the summit of the pass is reached, 11,660 feet above the sea and surrounded by perpetual snow.

Then the descent is begun, and in the vast timbered area west of the continental divide the big game country begins, extending westward and southward. The scenery is rugged in the extreme. Now and again one glimpses mountain streams, said to be alive with trout, pouring down over the rocks to join other streams in their course to the far-away Pacific. This was a favorite hunting ground for the old-time trappers, and more than one profitable and eventful trapping season was spent in this region by Kit Carson and his adventurous companions, gathering a harvest of beaver pelts while they maintained an almost constant warfare against the Indians.

Photograph by Steve Baxter.

A COLORADO CAT IN A TIGHT CORNER.

This picture was taken with an ordinary four by five camera by Mr. Baxter, one of the old-timers in Routt County.

Photograph by A. G. Livingston.

RAPIDLY DISAPPEARING DENIZENS OF THE WILD.

Colorado is awakening to the necessity of protecting its deer and last year the shooting of does and fawns was prohibited.

There were several local sportsmen on the train, bound for various stations, all eager to be first in the field with the opening of the prairie chicken season the following day. No introduction was needed, and I made myself a member of several groups and obtained some hints which served to verify reports previously made me by guides with whom I had been in correspondence.

Our train reached Steamboat Springs, the terminus of the road, at seven o'clock in the evening. This is an attractive place, surrounded by numerous springs of soda, sulphur, iron, and other mineralized waters, and boasts a comfortable hotel. It is rather far west to meet the guides, most of them, in the Routt County district, living in the vicinity of Yampa.

The following morning I took an early train to Phippsburg, in Yampa township, a few miles to the eastward of Steamboat Springs, where I met Albert Whitney, a well-known bear and lion hunter and guide, as well as several other of the local hunters. It had been my hope to cross the intervening counties to the southward on horseback from Phippsburg to Glenwood Springs, visit Meeker and Rifle, and meet as many guides and hunters as possible, and thus secure as intimate a knowledge of the game country and connections as such a trip would afford, but this, I found, would require more time than I had at my disposal and rob me of time which I wished to devote to Wyoming and Montana. Though this was early September, snow had already fallen, a suggestion of what might be expected in the country farther north. Therefore, after two days in Phippsburg I returned to Denver and proceeded by train to Glenwood Springs.

This is the chief rendezvous of the Colorado guides, an excellent outfitting point. Chief among the guides here are Anderson and Baxter, who work together as partners, and W. W. Warner. All of them were absent, however, to my disappointment, save Steve Baxter, a famous old-time hunter and trapper, one of the pioneers of the region, and a member of the firm of Anderson and Baxter. Steve has hunted from Montana to old Mexico, possesses one of the finest packs of bear and lion dogs in the country, and was at this time preparing to take a party of sportsmen to Mexico.

He is one of the few guides who guarantees game, and makes no charge if he does not show the sportsmen who employ him the game they are after. Bears and mountain lions are his specialty. Deer is the only big game animal, save bear and predatory animals, upon which there is at present an open hunting season in Colorado. He was with Harry Whitney, the well-known sportsman-author, of Arctic fame, when the latter secured a record grizzly north of Glenwood Springs a few years ago.

Previous to going West I had corresponded with fish and game commissioners, game wardens, licensed guides, and others, in the States through which I planned to travel and had received from them estimates of the amount of game still remaining in the various localities with which they were familiar, the amount of each of several kinds of animals killed during the previous year, and the number of legalized hunters. It will be understood how difficult it is to make a close estimate of wild animals covering a large spread of country.

A Big State to Canvass

When one pauses to consider the vast extent of territory included, even in a single one of our Western States, this will be appreciated. There are several States, for example, much larger than Colorado, but when we remember that Colorado alone has an area equal to the combined areas of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, Delaware, Maryland, and Hawaii, with enough territory left over to make a new State considerably larger than Massachusets, some conception can be formed of the real bigness of the West.

A State larger than Massachusetts could be made of Gunnison County, Colorado, alone. With this in mind, let us remember that the game estimates I shall give, though compiled from the reports of the best observers in the localities under consideration, are only approximate.

Let it be said to the honor of Colorado that several years ago the State awoke to the fact that mountain sheep were rapidly disappearing and that prompt action was needed to save them from extinction. Absolute protection was extended by law to this monarch of game animals, and they began to increase noticeably. My estimate, compiled from reports, places the number at present within the State at approximately 3,500, and I may say that this totals fully one-half of all the mountain sheep now remaining in the United States.

In other words, it is doubtful if the United States possesses to-day more than seven thousand, with Wyoming and Montana following Colorado with probably less than five hundred sheep each; both of these States still permit hunting in spite of the fact that the animals are nearing extinction and that the ranges in the high altitudes and rugged mountain peaks inhabited by them are incapable of supporting any other animal of value save the mountain goat. When the Wyoming and Montana ranges which might support many thousand sheep under normal conditions are finally depopulated, as they are sure to be at a not distant date, they will be unutilized, desolate, silent wastes.

Future of the Sheep

Though Colorado still has so large a proportion of the sheep, her ranges could easily support many times the present number, and to have the prohibition against killing suspended for several years to come would appeal to those interested in perpetuating the species as little short of a calamity.

I sound this warning because I know that a resolute effort is to be made to prevent the extension of the present prohibition against hunting, which, as the law now stands, will end in 1912. Some of the guides are exceedingly anxious to have an open hunting season, for this would then be the best and most available hunting ground for mountain sheep in the country, the animals could be killed with a comparatively small expenditure of effort, and sportsmen would flock here to secure trophies while they are to be had, to the increased wealth of the guides. This does not apply, of course, to all the guides, for some of the best of them are animal conservers, and I am sure, had they a voice in the matter, would oppose the movement.

Every section has its quota of hunters who care nothing for the future or the preservation of species. They think only of to-day and care nothing about to-morrow. The animals are there, and they believe they should have a chance at them now. These are the people everywhere who bring pressure to bear on local members of the legislature, belonging to their districts, and the members, fearful of losing adherents and with nothing more than a passive interest in the game, introduce laws and give their vote without regard to the future of the game and in accordance with the wishes of the selfish ones, relying upon the fact that the remaining majority have too little interest in the subject to be influenced by their course.

Mountain sheep have three great enemies that naturally retard increase even when there are no open seasons as in Colorado—the poacher, the cougar, and the golden eagle. These are the enemies, in fact, of all game animals, not only here, but throughout the game districts of the West, wherever they exist, and unfortunately the poacher is to be found wherever there is game, East and West, though here and there I found localities where a strong game-protection feeling has grown up, and poaching is not common, as, for instance, in Jackson's Hole, Wyoming.

Practically wherever I went I found a strong feeling of sympathy for the poacher. In some sections ranchmen and mountaineers expressed themselves without reserve as seeing no harm in "getting a piece of meat" whenever they want it. The sentiment is carried into execution in all secluded sections, and not a few mountain sheep, deer, elk, and wild fowl are killed in Colorado by men who believe they are morally right in doing so, irrespective of law. Herders of domestic sheep are among the worst poachers throughout the West.

Colorado has too few game wardens

Photograph by Steve Baxter.

A HUNTER'S CAMP IN THE WILDERNESS.

The dogs are a mixed lot of foxhounds, bloodhounds, and Airedales belonging to Mr. Baxter and are used for bear hunting.

Photograph by A. G. Livingston.

A WOODLAND IDYL.

These are not "park" deer, but the genuine wild game. Those who know the difficulty of *seeing* even one deer in the Rocky Mountain country to-day will appreciate the problem of *photographing* five at one exposure.

by far to watch everybody, and some of them are not over anxious to see infringements, for reasons that appeal to them as quite sufficient. The best wardens are United States forestry rangers, in States where they are clothed with authority to make arrests. They are usually not native to the localities where they are stationed and have no preferences or axes to grind. Local wardens, on the contrary, are frequently appointed through the instrumentality of their friends, and they hesitate to prosecute those friends whom they find infringing the law. Not infrequently to do so would mean to lose their office.

There are some instances where the wardens themselves are notorious poachers, and their appointment, through proper influence, leaves a free field in their districts, save to some unfortunate outsider who intrudes, or to those who do not belong to the charmed circle. This reference is not to Colorado alone. Other States are equal sinners.

Poachers at Their Work

One rank open case of poaching came to my knowledge in Routt County. During July a New York City man, who lives on Riverside Drive and whose name and address I know, appeared at Yampa with two companions. At the local livery stable they employed a guide who took them with their outfit to a point in the Flat Tops, near what is known as the Devil's Causeway. Here the guide fitted up their camp, made them comfortable, and returned to his duties at Yampa. The party was presumably on a fishing trip, as at this season there is no open season on any game. The guide applied for and secured for them the necessary licenses. Here they spent six weeks, moving camp a short distance once.

A guide who had a camping party in the mountains observed them from a distance and brought his party, consisting of a Chicago man, another gentleman and the Chicago man's wife, to a rendezvous where, unseen, they witnessed a wigwag signal from above the Devil's Causeway to some one below. The Devil's Causeway, it may be explained, is a narrow natural bridge spanning a gorge. Presently shooting began.

Later the guide and his party watched the men skinning a mountain sheep's head. Field glasses were used by the guide's party, though they were near enough to see very well with the naked eye. The Devil's Causeway is a regular runway for sheep. One of the men hunting for them discovered the sheep, on the opposite side, wigwagged the information to his friends to be ready for them, closed in above the animals, and started them across the causeway, where they were shot. How many were killed I cannot say.

Another man, not connected with this party of observers, walked into the camp later and surprised one of the three retreating into a tent with a freshly killed sheep ham and claimed he found evidence that several elk had also been killed. The guide notified a game warden what had been seen. The day following the warning the man who had taken the party in went for them, brought them out to the station at Yampa, and they departed. Their baggage included trunks of ample dimensions to accommodate sheep heads. When they were well away and safely out of reach, the warden went to the mountains. There was nothing, of course, to be found.

Later I called at the office of the Game and Fish Commissioner in Denver and related these facts to the clerk in charge. Mr. Holland, the Commissioner, was not in at the time. The clerk expressed unbelief. Then I told him the name of the Yampa man who had taken them in and stated that this man had applied for and secured a license, and the name of the man in whose name the license was made out.

He knew the Yampa man by name very well as one of the licensed guides, but was certain he had applied for no license for the party mentioned. Then I incidentally enumerated the names of some of the people who had seen the poachers at work and stated that I intended getting affidavits from them covering the facts and I would print or use them as I found advisable. He became very much interested at once, con-

sulted his file and verified dates and names in accordance with my statement. He was very anxious that I send him the affidavits when I procured them.

On a previous occasion Mr. Holland told me that it was impossible to secure a conviction unless the defendant was actually caught *"with the goods."* These particular poachers had gone "with the goods," all of the witnesses save one were in other States, and prosecution was hopeless.

But the authorities now and again catch the poachers. I was in Mr. Holland's office in the State Capitol one day when a poor mountaineer guilty of sheep killing was brought in. They had caught him red handed, and I understood he was severely punished and others had preceded him. They jail them sometimes.

Let it be said in this connection that Mr. T. J. Holland, the State Game and Fish Commissioner, is undoubtedly most conscientious in the administration of his office and an efficient commissioner, but in order that a game commissioner prosecute the duties of his office satisfactorily and effectively not only he, but his wardens and deputies, should be especially qualified for the position they fill; and no matter how well qualified or energetic he may be, he labors under a severe handicap unless his wardens are also efficient and energetic and free from any political taint.

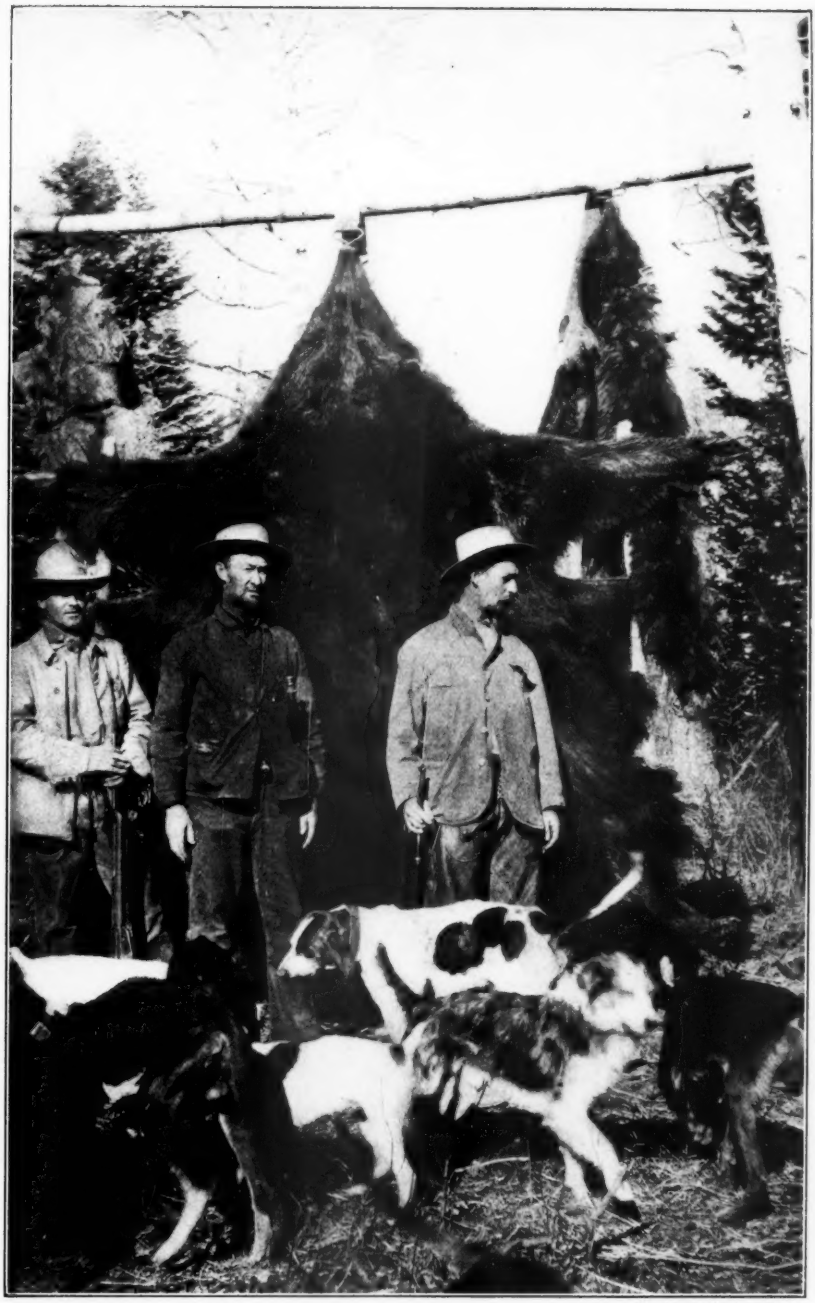
Speaking generally of all our States, the commissioner himself should be a sportsman and something of a naturalist —a man who not only loves the wilderness and the living things of the forest, but knows from observation something of the habits of animals, birds, and fish. He should have sufficient knowledge of these things to decide when a range is well enough stocked to admit of hunting, or when and how to restock a depleted range. A man of this sort could be trusted with power, under certain restrictions, to close and open hunting seasons by proclamation, as necessity demanded; or at least to make recommendation to the legislature, which the legislature would as a mater of course follow.

Wardens and deputy wardens should be appointed only upon competitive examinations as to qualifications and stationed at points where they will do the most good, regularly patrolling their districts. Their position should not depend upon the rise or fall of the political party to which they belong. It would seem that the game is valuable enough to warrant such additional expense as this might entail, and in all probability license fees would make the department, if administered on business principles, self-sustaining. There is indeed a question whether or not game should not come under Federal control, as the migratory habits of birds and many species of animals make them to some extent, at least, inter-state property. Every citizen of the United States has, so to speak, a *quasi* interest in all the game within its borders.

Under the present methods universally in vogue throughout the United States, the commissioner receives his appointment through political preferment, irrespective of qualification. He, in turn, appoints his wardens because they are good party men, who have lent their aid to the advancement of party interests. Their qualification for the position does not enter very largely into the question. I have no doubt those now holding office under this plan and the politicians who wish to retain as many political plums for distribution as possible, would oppose such change strongly and be highly indignant at the charge that the present system is not wholly adequate, but it is, nevertheless, true that it is highly inadequate.

The "Game" They Knew

I know one game commissioner who, it is generally claimed throughout his State, does not know a prairie chicken from a spruce grouse. He was appointed as a reward for activity during the campaign and to make a place for him an unusually competent commissioner, a man who had made a life study of animals and their habits, was deposed. In one big game section I asked if the local wardens took an active and intelligent interest in the game. The answer was "Yes, the poker game; but no other."



Photograph by Steve Baxter.

A RECORD GRIZZLY OF ROUTT COUNTY.

The hunter at the right of the picture is Harry Whitney of Arctic fame. His Colorado hunting was done before his first trip North.

This applies equally well to many sections.

Returning to Colorado, it is probable that a close approximation of the elk would be two thousand, and while they are scattered over various sections of the State, the greater part are in the northwest. This is a good nucleus for increase, and with proper care and preservation Colorado may in time have some good herds, for her winter and summer ranges are well adapted to elk.

From reports received I find it impossible to even approximate the number of deer in Colorado, or even to estimate with any degree of accuracy the number annually killed. The guides could tell me how many were killed by their parties, but they are unanimous in stating that so many are secured by natives hunting without guides that the reports sent me are no indication of the number actually killed.

With the exception of two or three, however, all admit that deer are noticeably decreasing, or were, previous to 1909. Then the laws permitted the killing of does and fawns, and the slaughter was in consequence considerable; with 1909 the season was shortened to ten days, and only bucks with horns allowed.

Mr. Holland informed me that eagles were the greatest destroyers of young fawns and lambs, and in his judgment contributed more than any other factor to retarding increase. Mountain lions and lynx also get their share of the game, and a very considerable share, too. Baxter's parties alone killed, during 1909, twelve lions and twenty-eight lynx. This may be taken as an indication of how numerous they are and the depredation they must necessarily commit.

The highest estimate that I received of the smaller bears in northwestern Colorado was two thousand, and the highest estimate of grizzlies two hundred. The next approaching it was one thousand small bears and one hundred grizzlies, and from the information contained in the majority of reports I should say that even this could be cut down to five hundred of the one and fifty of the other as a very liberal approximation. During 1909 Baxter captured thirty-three of the smaller bears and one grizzly. Considerable numbers were killed by others.

With very few exceptions hunters and ranchmen with whom I discussed the question throughout the West were in favor of protective laws for all bears. It was conceded that these animals are now confined to so remote localities and are so few in number that their destruction of domestic stock is almost nil. Even the grizzly has become harmless, and the smaller bears never were a destructive factor.

Bears breed so slowly that, unless steps are soon taken to protect them, the day of their extermination is close at hand. It may be claimed by the materialist that any plea for the bear is purely sentimental, but who among nature lovers would not feel more than a qualm of sorrow were this noble animal of the wilderness, which played so large a part in our childish fancy and dreams, driven to extinction? Furthermore it has a decided value, even from the most sordid standpoint, for its pelt, if for nothing else.

Northwestern Colorado—Colorado as a whole, in fact—is so interesting that I turned westward again to Salt Lake to resume the saddle with keen regret that I could not dip further into its wilderness and revel for a time in its lofty, rugged peaks and marvelous scenery.

(To be Continued)

CONTRARY TO CUSTOM

BY L. K. DEVENDORF

Illustrated by R. W. Amick

IF you want to hear tales of departed glory and of the things that were, you should pick out a box with a sheepskin cover, lean your back against the side of the bunk-house, and wait. The right time is in the evening, about ten days after pay day—when the headaches are all gone and the outfit is busted. Then it is that the cattle towns have no call and the "bunk-house gossip" runs the limit.

SLIM McGRAW.

The old hands hold it their right and title to impress upon the "calves" that the present only furnishes the wherewithal by which a man keeps himself from being a range-drifter—for the glory and chivalry are part of the past. The talk always swings around to bad men, gun fighters, and rustlers—fields overworked and apparently exhausted, yet fertile and ever productive.

"And they don't *always* die with their boots on either," said Howdy Lyon, who for years had been Wilbur's boss-puncher—an excellent listener, rarely a teller.

"Some of you older fellers, if you've ever worked over in Grant County, probably's heard of Slim McGraw. Anyhow, there was a feller who was cuttin' quite a wide swath over there, durin' the time Jim Cresson was sheriff—this same Slim McGraw. I was breakin' horses in Cresson's outfit then and, like everybody else, was tryin' to get enough money together to have my name painted on a chuck-wagon, and own a brandin'-iron.

"Word came out late one afternoon that the till of the minin' company's paymaster had been touched off—this was the second time, too. Before this, the stage had been held up and the express company's office had been robbed once and broke into the second time. You see the pickin's was good in both places, and who ever it was that was doin' it was workin' the ground over as long as it panned anything.

"The feller that fetched the news about the last doin's also brought a paper stating that a reward was offered for the 'person known as Slim McGraw.' Twenty-five hundred was what they was willin' to pay.

"I got to thinkin' about that twenty-five hundred that night, and the next mornin' I quit and rode into San Tina.

"The talk was still goin' on about the paymaster business and the general opinion was that it was McGraw who was shakin' the pan. He'd been rated as 'bad' for some time and a few seconds quicker with his gun than is necessary for a man to be who's tryin' to keep tame and quiet.

"They said in town that McGraw hadn't been in San Tina for two months. You see it was durin' this time that all these things had been pulled off. Be-

sides, there was some other things that looked like him. Both times the stage had been stopped, the passengers and Lance Crim, the driver, said it was a man who was tall and thin—and had long fingers. McGraw had fingers that looked as if what had been left over from makin' legs was used up in fingers. He was tall and thin as 'n Apache arrer and as rangy as a Pecos yearlin'.

"Now, I'd never seen this McGraw person, but got all this in San Tina—and a lot more that'll stand passin' up, exceptin' the talk about somebody's occupyin' the 'Pache Creek country. This creek runs around at the foot of the Old Hen and Chickens spur and always had water in it. It was an old 'Pache stronghold. You went in one end and the only way out was at the other—unless you come back.

"It had been dug over a good many times, but never showed any color. Yet prospectors kept goin' in and out, for it was likely. Them that came out the San Tina way had been tellin' of scattered ashes, fires covered up, iron shod pony tracks, hid by brush bein' dragged over 'em, and all such, like as if someone was tryin' to keep the signs under.

"This set me to thinking', and I concluded to dust this place for McGraw. The last time he'd been seen was when he rode up to the cook wagon in Mullins's outfit and asked for the tar pot to close up a long cut in his pony's flank. This was two weeks before. Mullins's ranch was about twelve miles from the other end of the creek bottom—what's called the Notch.

"The mornin' I started out, a greaser brought in the news that old Bannimo had jumped the reservation with a lot of other 'Pache bucks and was headin' for the 'Pache Creek country. I didn't pay any 'tention to this, for them greasers stampede every time a buck takes to the hills for pot-clay.

"Well, the second mornin' in the creek bottom was passin', and I hadn't seen a sign that wa'n't regular and ord'nary. I'd never been through it before and was takin' my time. I rode out on a little sand spit, slipped off the pony and bent over to drink. Before I'd got through, the mare raised her head and sniffed. A shadder come across the eddy—moved a little and stopped.

"There wa'n't no call to hurry for I knowed whoever it was had me stood up past all helpin', if that was the way he was totin' his gun.

"I finished drinkin', got up, and turned around. I wa'n't exactly scared, but I felt my stomach kinder crawl up between my ribs and crowd my wind. A man stood there. He was so close to the description I'd been carryin' in my mind that you couldn't slipped a June frost between 'em. There was no discountin' it—the man I was lookin' for stood there, with his repeater hung careless like, in his hands—about on a line with my hank'chef.

"'I s'pose you've seen the "smoke talk?"' says he.

"'No,' says I. 'Where?'

"'Why, back on the ridge—I s'posed you was watchin' it,' says he.

"I looked back to where he pointed and there, sure enough, was the puff-puff goin' up.

"''Paches!' says I.

"'Yes,' says he. 'I've been watchin' 'em for some time, wonderin' who they was stalkin', till I saw your pony tracks back there. There's another gang below—down by the Notch, waitin' for you to come through, prob'ly.'

"'Bannimo is out then,' says I.

"'Like enough,' says he.

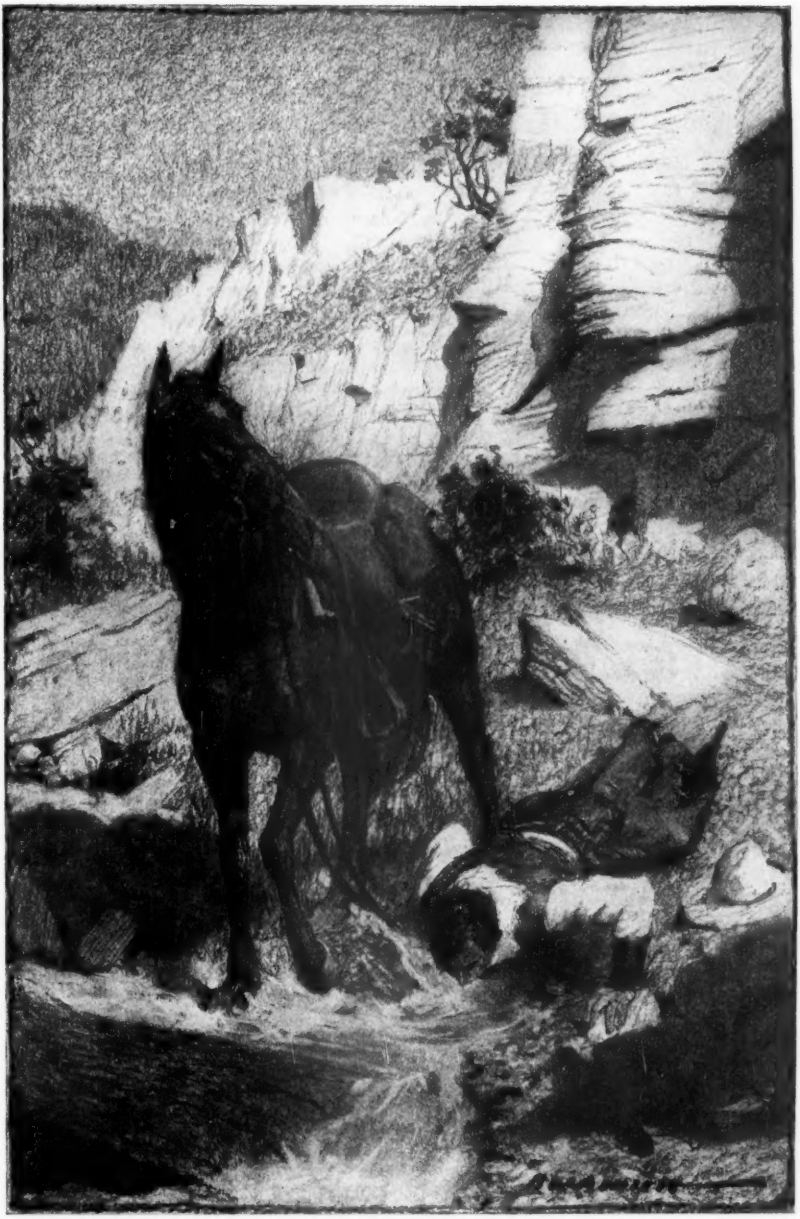
"'You don't figger they seen you then?' says I.

"'No, I was here fust and seen them come in. They must have seen you when you crossed the windfall. They'll be comin' down the side, afoot, soon and cuttin' you off from goin' back, and the gang below'll get you comin' through. Better pull your pony back here in the bush,' says he.

"Well, I pulled the pony back out o' sight from the rocks on the other side and wondered what his plans and intentions was.

"'Now then, son,' says he, 'unless you've got some good reason for believin' that you can lick up'ards of twenty Old Bannimo's crazy bucks, you'd better trail along with me.'

"It didn't take me a second to decide. I *did* want jest such help as he was hold-



"BEFORE I'D GOT THROUGH THE MARE RAISED HER HEAD AND SNIFFED."

in' out an' told him so. It was a sure 'nough mess and looked bad.

" 'Keep right on ahead, then, and keep bearin' up the side,' says he, pointin' to the scrub.

"After awhile we come to a place that stuck out over the creek. It was like a tea cup, upside down—the bottom hollered out and rocks piled all along the rim. The back was open and too steep to climb. In front and 'cross the creek the rocks fell away below us. It wa'n't more'n fifty feet down to the water from the edge of the pocket, but just before the stream reached the point it choked in between the narrer walls and tore along too strong for anybody to git through alive. Under the point, it eased up again. Up and down the creek, the ground sloped fast and was covered with rocks and drift and brush. I could see then, that anybody followin' the creek—up or down—would have to cross the point. And anybody not noticin' in particular would think the rocks was layin' about natural, but when you come to take it all in, you could see they was put there and put there for the purpose o' stoppin' lead.

"Between the big rocks smaller pieces had been chinked in. The sand had been dug away from the bottom of a big boulder, and the face was blacked from smoke. The back of the pocket sort of lipped over and spread out into a little lane—big 'nough to take the two horses —and I could see a horse had been in there before.

"When we got fixed, McGraw says: " 'We wa'n't none too soon. There's a buck wavin' a blanket—over there by that scrub oak.'

"We watched them for a while, coming down the face of the bluff. We could see the sun shinin' on their ornaments. They'd missed me and was wonderin' why I didn't come along the creek bottom as I'd started to. We counted twelve of 'em as they crossed the creek, and we knowed there was about the same number in the gang below at the Notch.

" 'Twa'n't but a few minutes before they was all in the creek and found where I'd stopped to drink and a minute more and they wa'n't a buck to be seen.

"We watched for 'em, and slick as they was, dodgin' in and out between the rocks and brush, it was only because the sun picked up somethin' that shone like a piece of lookin' glass, that we located 'em. "Jest as they always do—they kept gainin' on the point—crawlin' and wrigglin' from place to place, tryin' to get close 'nough to locate us without bein' seen. More'n once I covered a buck only to lose him from out o' the sights of my gun. I was considerable younger then than I be now and I s'pose I was nervous.

" 'Pull your cartridges out and spread 'em along on the ground in front of you,' says McGraw, 'where you can get at 'em quick—and keep cool—keep cool—shoot low—the top of the breech-cloth, and don't shoot at all of 'em—keep at one until you get him; that's what discourages 'em.'

"They began to shoot now and the chips from the rocks pattered around and stung my face and hands, and I'll tell you I began to sweat in streams. One minit I felt like yellin', and the next I wanted to crawl under something. I was gettin' locoed by the clock.

"McGraw must have noticed me, for he crawled over side of me.

" 'Watch a puff of smoke,' he says, 'and watch the buck that's makin' it; when he shows himself, git him. You'll see one of 'em showin' himself—tryin' to draw your fire; then when you fire and before you can jam another cartridge in, they all rush ahead for another place. You blaze away at the first one that shows,' says he, 'and I'll git one of the others.'

"In a minit a black mop of hair come around from behind a rock, then a buck stood out for jest a second and jumped for a rock ahead. I fired and missed—then the gang broke cover and come on. McGraw let go and a buck dropped his gun and grabbed his stomach and laid down. Twice more they tried this game, and both times McGraw made a killin'. I missed both times.

"Then they tried all shootin' at one place between the rocks, and passin' along till they'd sounded every hole on that side where we was layin'.

"I saw a bush movin', up the slope

where there wa'n't a bush a minit before, and knew there was a buck behind it. I plumped three shots into it, and a feller with a big hole in his chest stepped out clear.

"'Stiddy now—stiddy!' says McGraw. 'Watch him—he's hard hit.'

"He was all smeared with blood and yellow soap stone that he'd daubed himself with. He knew he was a goner and had nothin' more to risk. He started straight up the slope—yellin', alone, tryin' to get a shot before the blindness come over him. He staggered, threw up his gun, and emptied it at the point; then come on stumblin' and yellin' and before he quit he was within ten feet of us. That's the Injun of it—I seen the same thing when Clark caught Little Bull's gang over in the Bitter Spring Valley. You see, he'd been a chief some day if the medicine had lasted.

"HE KNEW HE WAS A GONER AND HAD NOTHIN' MORE TO RISK."

"McGraw was poundin' away on the other side to beat hell. He wa'n't sparin' of the ammunition, and I began to wonder where we was comin' out. He kept 'em back by jest makin' the slope too spattered up with lead to be comfortable.

"'Go slow on the ammunition,' says I.

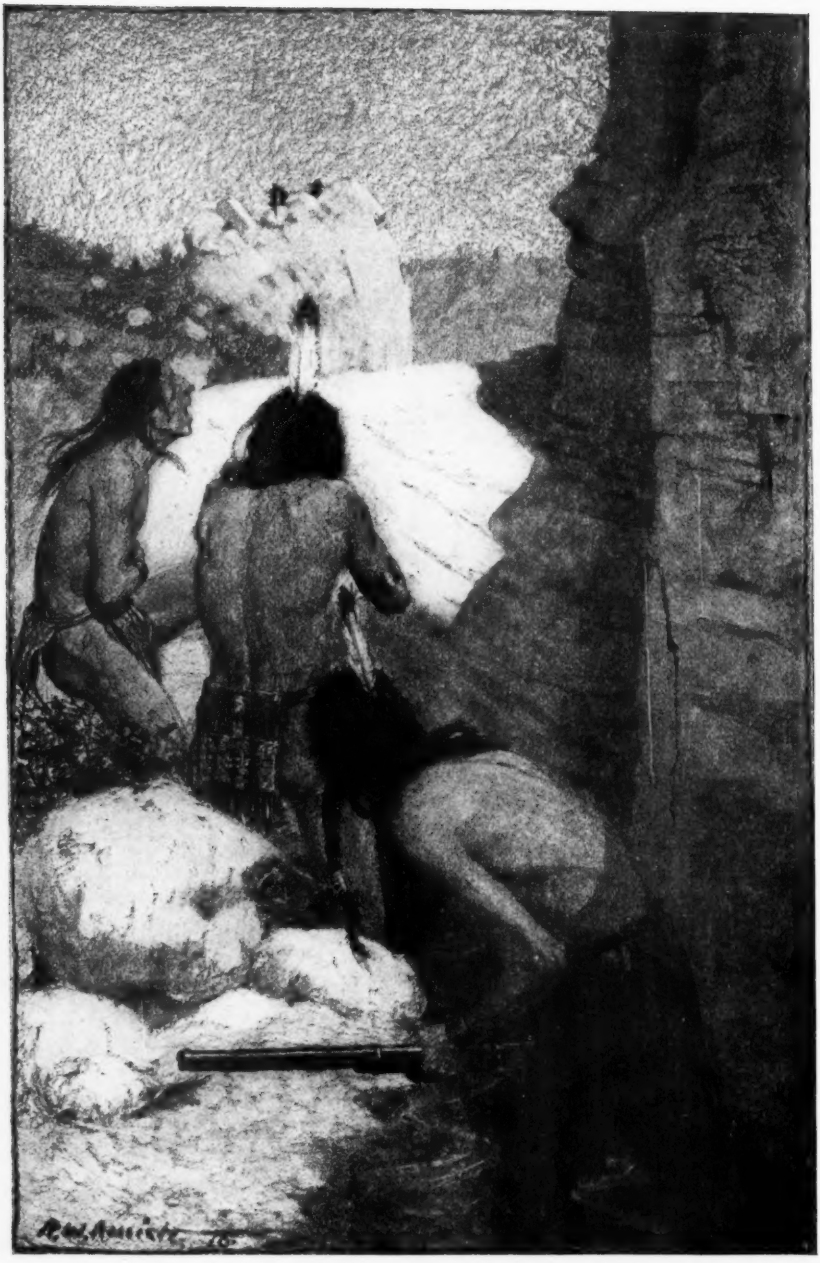
"'Go to hell!' says he, 'and keep your gun from jammin', there's cartridges enough up here to last till it rains—use 'em up 'fore they spile.'

"Bymebye he brushed away the sand from a place between some rocks and uncovered a box and threw me a couple of packages of forty-fives. 'There,' says he, 'don't git panicy about gun-fodder.' "You see, he'd figgered on something like this—white or red.

"If the two gangs could have planned on rushin' us, both together, they could have got us, but, you see, they wa'n't no way of fixing it up. We was in between 'em. They tried rushin' twice, but we stood 'em off. Both horses got loose and jumped clean over the rocks and the 'Paches killed 'em on the slope before us.

"I tell you, it was the hottest afternoon's work I ever seen. McGraw'd caught a glancin' shot that creased his forehead jest above the eyes and was cussin' like a borax teamster. Two of my ribs was busted when McGraw's pony crowded me aginst the rocks in gettin' away. Every time I took a long breath it felt 'sif I'd swallered a cactus. We wa'n't doin' much killin' now, but now and then a buck crawled back into cover on all fours.

"Night finally come, and things quieted down. We knew there'd be nuthin' done till daylight. In the night sometime, someone from each gang would git to the other and plan some way to git to us, and prob'ly already had sent out for 'nough help to rush us.



"McGRAW LET GO AND A BUCK DROPPED HIS GUN AND GRABBED HIS STOMACH."

"There was a lot of things done after dark that night, between us, that ain't much more'n anybody'd done. We eat a bite and talked, and listened, and watched. It was as dark as I've ever seen it, and quiet, but what I started out to tell in the fust places comes in here.

"McGraw says, 'Look a here, son, I've got an idee who you might be and what you're after, but I ain't goin' to touch on that; the fact is, we're in for one of them stakin' out, fire on your bread-basket parties to-morrow, and you and me is goin' to be the chief entertainers. They'll try to git us alive now and put us to the torture, as the books say. Now, it 'pears to me that one of us has got to git out and git help—two could never make it, and you don't know the way. Mullins's lays off to the north—not more'n twelve miles. Say I left here at ten o'clock—I'd make there by one—afoot; allowin' half an hour to git started back, I'd git the boys back to the Notch by three anyway.'

"Well, leavin' out the plannin' and my objection and all that, and how we tied our two ropes together, and my lettin' him down over the face of the point into the creek, that he said made so much noise from there to way below them that they couldn't hear him, and his sayin' to me, hangin' over the black hole, 'Remember, son, if I don't git through and they git to you, the corner of your eye is the surest place to tuck your six-shooter in.'

"I tell you, boys, them few hours, alone up there in that little pocket in the rocks was hell and back to Yuma—but that ain't interestin'. Along toward daylight, though it wa'n't light yet, I heard a bugle, down in the Notch. For a minute I thought I was loco. Then the firin' began. I crawled over to the rim and looked down the slope. I could see the flashes from the guns—and pick out the bangin' from the Springfields.

"I forgot all about the gang on the other side of me till they commenced to come over the rocks into the pocket for a last chance at me—but it was too dark for 'em to see me. I slid around behind the rock that McGraw had used for his fireplace and opened up on 'em in the dark. The place was too hot for 'em—and they didn't stay.

"It was jest daylight when the regulars came crawlin' over the rim. McGraw had found 'em camped before he got to Mullins's'. They was out to round up old Bannimo before he'd hardly got started, and McGraw had brought 'em into the Notch. When he got to me—alone—he says, 'Son, you still got foolish notions in your head about me?'

" 'No,' says I, 'no foolish notions. I'm a horse breaker—seventy dollars a month looks big to me.'

" 'Then you and me understand each other, I guess,' says he.

" 'We do,' says I.

" 'Well, you stick to breakin' horses,' says he, 'and go down where they're gittin breakfast.'

"When things got quieted down and they began to drift along back to the Notch, I watched for him to come in, but he didn't show up, and I never seen anybody who placed him after that.

"And this is what I started to tell in the first place—before I got wanderin' off—McGraw was prob'ly blamed for a lot of things that he never had no hand in. Anyway, it prob'ly got too hot for him, for he shook the country.

"About five year ago, I was loadin' a car of horses up in Albuquerque, when the runway broke and let me down among a bunch of kickin' stock. When I come to I was in the hospital. When I got so's I could notice things, I looked over to the cot next to me. There laid McGraw—just goin' over the Divide. They told me it was a camp cook who'd cut his hand openin' a can of beans and had blood poison. He died, in a bed, between two white sheets, with a woman wipin' his forehead and his boots off."

OCCUPATION AND EXERCISE

BY WOODS HUTCHINSON, M.D.

IN the beginning, occupation and exercise were synonymous terms. The strenuous life was the common lot. You had to live it just to get bread and butter. It was a case of eat or be eaten. No one took any more exercise than he had to, because *"had to"* was more than enough. This was when the sentiment grew up that it was unhealthy to work between meals. Indeed, primitive man got nearly enough exercise at table, tearing his meals to pieces and worrying them down, to keep him in fair golf condition.

But we have changed all that with a vengeance, and civilized man may be divided, from the physical training point of view, into two great classes, one of which gets a great deal too much exercise in the course of his daily toil, and one which gets far too little. A few fortunate occupations occupy the golden mean, but even they are very apt to face, at some time of the year, or stage of their course, either the under-exercised, or over-exercised condition, often both by turns. The bread-winning occupations of civilization have been organized, alas, without the slightest regard to their influence in promoting the health and happiness of those who are engaged in them.

As matters now stand, there is scarcely a single individual, man or woman, who does not find it necessary to plan for some other form of muscular exercise, to make good the lack, or balance up the one-sidedness of the exercise which they get in the course of earning their living. Perhaps some day we will realize that the most important and precious product of any industry is the kind of men and women that it makes, and plan its hours accordingly.

Of course, everyone admits at once that the man or woman of sedentary occupations and indoor habits of work needs a liberal allowance of outdoor exercise to keep in health. But it is not so generally recognized that the hard working day-laborer and artizan, the man in the blacksmith shop, the blast furnace, the quarry, or the saw-mill, is equally in need of a great deal of muscular exercise in the open air, in spite of the tremendous horse-power expended by his muscles every day in his regular toil. Yet, paradoxical as it may seem, those who work hardest are most in need of exercise.

Some of our hardest working occupations show a very high mortality from tuberculosis. Two of the most unmanageable and rapidly fatal cases of this disease that I have ever seen were in a frontier mail-carrier who rode forty miles on horseback every day, swimming from two to five streams en route whenever they happened to be in flood, and a timber-cruiser, or field surveyor for a big lumber company, who was perpetually taking months-long trips through the most inaccessible regions, with monotonous and often scanty food supply. Neither of them could get any vacation and they had almost forgotten the meaning of the word amusement.

"All work and no play" makes Jack not only a dull boy, but a sickly and short-lived one as well, as has been pointed out in a previous paper. It is hard to say which is the most powerful factor in producing a high death rate—excessive muscular work, or over-confinement. Certainly, occupations for both men and women, which combine the two—domestic servants and unskilled laborers—show the shortest life and the heaviest death-rate of all.

If a man wishes a long life and, what is much more important, a happy one, he must plan to spend at least two, and better three, hours a day in the open air, in some light, active exercise of the nature of a game or sport, that gives him enjoyment. If he would plan for four, he would find the additional hour anything but wasted. The same is equally true of women.

"But," says someone at once, "I am on my feet constantly every hour of the working day, either standing, walking about, running upstairs, handling books, or goods, and when night comes I feel as if the last thing that I wanted was any more exercise." This is particularly apt to be the attitude of busy housewives who declare that long before the end of the day every muscle in their body aches till they are ready to cry and resent, as arrant nonsense, any suggestion that more exercise would be of the slightest benefit to them.

Of course, in some of these cases, the best thing to do is to take the first ten or fifteen minutes of exercise on a lounge, or bed, so as to give all muscles a chance to relax and stop poisoning themselves. But after that, the apparent paradox is true, that the remedy for too much exercise of any kind is more exercise of another sort.

The hardest and most wearing exercise that the body can take is *to stand still*, and the next most trying is to sit still. Light, rhythmic, natural exercise is literally play by comparison with either of these wearing and unnatural strains.

The older physicists believed that the natural condition of matter was rest. Now we know that its natural state is motion in a right line and that it will perpetually continue in this, unless forcibly brought to a standstill. Something the same curious reverse of apparent conditions is true of muscle. Its natural state is movement, not rest. Usually when it seems to be at rest it is pulling against, or being pulled to a standstill by, some other muscle. When it is really at rest, it is neutralized chemically, or inhibited nervously.

We have all smiled over the man who rested so hard that it tired him, but this may literally take place with muscle. Eternal movement is the price of vigor. Hence the singular fact, which we have long known as a mater of practical experience, but were utterly unable to account for, that three days' absolute rest in bed will tire a healthy man almost as much as a Marathon race and will actually cause the loss of more muscular strength and muscular substance than will three days' mountain climbing. After a week's rest in bed, a man can barely stand alone. When we rest we weaken.

Nature's real recuperator of muscular vigor is not rest, but play, with such intervals of sleep as this brings. We are even finding that the quicker we can get our patients out of bed and get their muscles to working again, after surgical operations, the quicker they recover and the firmer the wound heals. Many surgeons nowadays try to have their patients sitting up and, if possible, walking about, within forty-eight hours after a major surgical operation, such as for appendicitis, or an ovariotomy. Except in special cases, twelve to fourteen hours is about the limit of time that a healthy individual, no matter how much fatigued, should lie in bed. Prolonged lying in bed wastes the muscles like a fever, and will even cause a rise of temperature in perfectly healthy individuals.

No Rest in the Body

This is a curious state of affairs and one which we are not entirely able as yet to explain, but this appears to be the drift, so to speak, of the situation. The normal condition of all muscles in the body is one of constant, rhythmic contraction and relaxation. We thought at one time that the heart muscle was an exception in this respect and spent much valuable time and many beautiful adjectives in marveling at its wondrous power of beating steadily on, never tiring, day and night. But it was soon found that all the muscles in the body of many invertebrates, such as jelly-fishes and sea-anemones, had this curious power of rhythmic pulsation.

About fifteen years ago, our modern wizard of science, Loeb, showed that by simply immersing one of the body muscles of a warm-blooded animal in the proper salt solution, it, too, would start beating rhythmically and keep on indefinitely as long as a certain tonicity of the solution was maintained. In other words, to put it very roughly, our whole bodies are hearts, beating and throbbing day and night, whether we lie, or sit, or stand, or run.

This threw a flood of light on the long

known fact that all our body muscles, for instance those in our legs and arms, never entirely relaxed during our waking hours, or even in sleep, but remained in a state of what was known as tone or tonic *contraction,* found to consist of an exceedingly rapid succession of tiny, imperceptible contractions. In other words, our body muscles are really contracting incessantly day and night, and producing fatigue toxins, though in small amounts. When we exercise them, while we increase the size and range of their contractions, yet the net amount of this increase is not so great as would at first sight appear, for much of it is merely a change in the form of the work done by the muscles, or throwing it alternately, first upon one group of muscles, and then on another, with corresponding intervals of rest and relaxation for both groups.

On the other hand, to counterbalance the greater amount of work done and poisons produced, we have a weighty practical offset. While the body is lying perfectly still, every ounce of work involved in the circulation of the blood and of the lymph has to be carried out, alone and unaided, by the muscles of the heart and of the walls of the arteries. The moment that active muscular movement of any sort begins the whole body literally becomes a heart; the muscles, by contracting, pump out of themselves the blood and lymph, and at the same time, by pressing upon the veins, drive the blood on toward the heart. All our veins, of course, are provided with a close succession of valves in their interior which prevent the blood from flowing in any other direction than toward the heart. In fact, it has been estimated that from one-third to nearly one-half of the total force expended in propelling the blood around the body is contributed by this syringe-squeezing action of the voluntary muscles.

It is evident, then, that this "underground," or subliminal, incessant contraction of the muscles, which goes on even when the body is apparently at rest, while it produces only small amounts of fatigue toxins, may result in even larger accumulation of these poisons in the muscles than active exercise, on account of the stagnation of lymph and blood, both local and general.

The only really healthy and natural state of man or woman—to say nothing of children—is neither sitting, nor standing, nor lying down, but on the run! This is why play is literally not merely recreation, but re-creation.

Danger in Monotony

The same piling up of poisons may occur from a monotonous series of movements involving only a single group of muscles, or a single limb, especially if these are carried out in a cramped and unnatural position. Such movements as the incessant use of the pen, of certain tools, of the up-and-down working of the foot and ankle upon a treadle, or the monotonous manipulation for hours at a stretch of some drill, handle or lever are far more fatiguing and injurious than generalized, symmetrical, swaying movements of the whole body and limbs, which involve the expenditure of from two to ten times as much actual strength. The reason is that the former fatigue to the torture point one small group of muscles, keeping all the rest of the body on the strain to hold this tiny group in the right attitude and position, while absolutely failing to give any opportunity for washing out the poisoned lymph from the muscles, or for its proper driving through the general circulation and lungs and liver. The best cure and rest for the fatigue of a factory-operative, for instance, unless so excessive as to be absolutely exhausting, is a good brisk game of baseball, or prisoner's base.

It must also be remembered that there is a very large amount of unconscious and, for practical purposes, utterly useless muscular contraction going on all over the body, while one small group of muscles, or a hand, or a foot, is engaged in some special task, especially if it be one of some delicacy or difficulty. Just look, for instance, at the muscles of the body of a schoolboy, endeavoring to make a clean copy of a writing exercise, in the early days of life when writing is a high and arduous task. His mouth is screwed up into a knot, his brow contracted in a frown, his tongue thrust out,

his other hand firmly clenched, his knees drawn up under the desk, his back bowed over and twisted to one side, as if he were getting ready for a one-sided attack of tetanus, and every drop of energy in his body is fiercely concentrated upon that wretched and unmanageable pen point.

If you think you have outgrown that sort of thing in your superior wisdom and maturity, just stand before a mirror, and watch what your left hand is doing while your right hand is shaving. Or let some one drop a hand gently upon the muscles of the back of your neck, or the small of your back, while engaged in that interesting occupation, and see if he does not find them as tense as telegraph cables.

No matter what your occupation, how many or how few muscles it involves, you are exercising a far larger number of muscle-strands than you have any idea of and, for the most part, in such a way as to do you no good and them harm, rather than good, unless the exercise be of a nature to allow of frequent rhythmic, undulating changes of movement, position, and attitude of the entire body, or large parts of it.

Another most important thing to be remembered is that we, as human beings, pay a special and heavy price for that erect position of which we are so proud, in the form of an entirely new muscular strain of a severity and excessiveness suffered by no other animal. We do not *stand* upright; we merely keep ourselves from falling for brief periods at a time. We do not *walk* upright; we merely make a series of pitches or plunges forward and then catch ourselves before we strike the ground, and jerk our bodies back into a temporarily erect position.

Every attitude that we assume is an active one as far as our muscles are concerned. Paralyze our muscles when we are standing erect, and down we go in a heap, like a wet dish rag. Paralyze the great muscle-ropes of our backs or abdomens when sitting, and we shut up like a jackknife. Nay, even when we are lying stretched out in bed, we are calling constantly upon these muscles, and if they were to fail to respond, we should curl up in a bunch in the sag of the mattress.

This actually occurs in the very last stage of serious and exhausting illnesses. The patients' heads and shoulders cannot be kept up on their pillows, but collapse down into the middle of the bed, until their chins literally touch their knees. It is no uncommon thing for nurses to have to make rounds every hour or so to straighten out collapsed or paralyzed patients into even the semblance of a human figure.

This is why the hardest of all work we can do is to endeavor to stand erect without moving, or even with such limitation of movement as would accompany toeing the line, or keeping the feet within a circle two feet in diameter. This fact has been pounced upon by martinets of all ages as one of the most disagreeable and exhausting punishments, short of actual chastisement, that can be inflicted, particularly upon the young.

Standing Still the Hardest Work

When it comes, however, to such a degree of immobility as is involved in remaining absolutely rigid, without apparently moving a single muscle, like sentinels standing on guard or wrestlers posing for living picture groups, the feat becomes a positively Herculean one. Even the strongest and most vigorous of athletes will have great difficulty in maintaining their pose for forty seconds.

During the lying-in-state of King Edward VII in Westminster Abbey, it was considered desirable, for some characteristically idiotic ceremonial reason, that the grenadiers at the head and foot of the coffin should bow their heads and stand in a grief-stricken attitude motionless as statues. It was supposed that this could easily be done for fifteen minutes at a stretch, but several out of the first two or three couples of men fainted and fell headlong, and it was actually found necessary to change the guards every three minutes in order to enable them to stand the strain.

It cannot be impressed upon us too vividly that we maintain all our postures, standing, walking, or sitting, not like a chair or a table, but like a bicycle, or a

gyroscope, by virtue of incessant movement. We don't stand by an effort of the will, or by mechanical balance, like a bottle, or a nine-pin, but by innumerable oscillations from one side to the other, or backward and forward, or both, each of which corrects the other and enables us to hold a medium course.

When we walk or run, our motion is not straight forward like an arrow, but in a series of rocking, concentric curves from side to side, as shows plainly if we move slowly, a waddle in fact, or are broad across the hips. An easy, swinging, elastic walk, or a bounding, springy run, are a positive rest contrasted with prolonged standing at a desk, or even sitting in the rigid position often required for indoor work, with little opportunity to swing the limbs or bend the back.

The man who is well fed and in vigorous health will actually walk behind the plow, or swing an axe, or a hoe, all day long with less muscular strain and less danger of self-poisoning than if he stood all day at a counter or desk.

Burdens on the Feet

Another muscular strain which is a penalty for the proud privilege of being *homo erectus* is that of the muscles and tendons of the feet. The human foot, like the human back, buttocks, and nose, is almost unique in the animal kingdom. The support of the quadrupedal body is a comparatively simple affair. Every schoolboy, of course, knows that it is merely a matter of "one leg at each corner." Each leg is a jointed prop which, when set in a straight line, requires relatively little muscular effort to keep it rigid, and the foot is simply the last section of the leg prop. So little effort is required to prop a quadruped up that many animals, like, for instance, our friend the horse, lie down only two or three hours out of the twenty-four, and don't sit at all. Some of them, like the elephant, sleep habitually on their feet, and have been known, in captivity, to stand for years without ever lying down. Many animals, in fact, habitually sleep standing, but the human species has entirely lost this power.

Each foot of the human biped has literally to do the work of two feet, not only supporting the body at rest, but also prying it up off the ground and pitching it forward when we desire to move or run. We stand supported upon two curving arches of bone, each reaching from the ball of the foot to the heel; and the curve of each arch is supported, not by bony blocks of keystone shape, but by the incessant and elastic pull of muscle. Standing still tires out these muscles that support the arch far worse than walking does, and *flat-foot*, or the breaking of the arch, is one of the most painful and crippling lesser defects to which the human body is subject. It is produced by standing and so-called sedentary occupations upon hard floors, at least ten times as often as it is by outdoor work, unless this latter involves the carrying of heavy weights in early life.

Those most liable to flat-foot are employees in stores, shops, banks, and offices; nurses, domestic servants, and overworked housewives; in fact, all those whose occupations involve much confinement indoors, with poor muscular development, bad air, and periods of prolonged pressure upon this muscle-slung arch of the foot. The best and, indeed the only, ways to avoid it are to make the work more varied, so as to involve more walking about, or climbing, and less mere standing still, and to take plenty of vigorous and enjoyable exercise in the open air, such as walking, golf, tennis, baseball, dancing, skipping the rope, or hockey.

We used to attempt to cure this defect by mechanically supporting the arch of the foot with a curved piece of metal in the instep of the shoe, but while this is a temporary help, permanent cure can be produced only by systematic massage and vigorous exercise of the muscles of the calf and the front of the leg, so as to give them strength to resume their natural support of the arch.

Next after sedentary indoor occupations and prolonged standing, the most fertile producers of flat-foot are narrow, cramping, or fashionably misshapen shoes, which prevent the arches of the foot from expanding naturally, make walking a torture, and cause the sup-

porting muscles of the leg to atrophy from lack of regular use. A very considerable percentage of the physical breakdowns among nurses and saleswomen are due to this painful giving way of the arches of the foot, from failure of the supporting muscles due to insufficient outdoor exercise.

In fine, there are very few occupations of civilized life, and particularly of city life, however mild and confining on the one hand, or strenuous and out-of-door on the other, which do not require, as a corrective, a considerable added amount of light, rhythmic, pleasurable exercise, play, in fact, for the maintenance of health and efficiency. This involves, of course, two things, both of which are difficult—shortening of the hours of work and a constant and vigilant determination not to allow society, nor convention, nor fashionable apparel, nor the weather, nor the season, nor snow or mud under foot, nor storm or fog overhead, to interfere with our regular play periods. We should be as punctual about and as insistent upon them as we are upon our mealtimes, or our hours of sleep.

Need for Shorter Hours

Shortening the hours of work is, of course, difficult, and for the majority practically beyond our control, under the present senseless and wasteful method of conducting our business and industries without the slightest reference, not merely to the comfort and reasonable enjoyment, but to the health and efficiency, of those engaged in them. There are few things we do as stupidly and unintelligently as work, and some day it will dawn upon us that the best way to get the largest output of the best quality of work is to feed and recreate and rest and condition the workers so as to develop both their bodies and minds to the highest possible pitch of clearness, efficiency, and power.

The best way to make a success of a business is to get the highest possible class of ability, enthusiasm and vigor in its working force, and some day perhaps we shall be enlightened enough to make it our aim to get out of each individual the highest and greatest amount of productivity of which he, or she, is healthfully capable, in the shortest possible time, whether this be twelve hours a day, or six, instead of, as at present, simply chaining them to the desk or loom for as many hours out of the twenty-four as the law will allow or their poverty enable us to demand.

In the meantime, while we are waiting for the dawn of the millennium of common-sense and humane feeling, if all those who are able in any way to control the length of their hours will shorten them to that length which coincides with their highest efficiency, by giving plenty of time for wholesome, life-giving enjoyment out of doors, their example will help mightily. After a time, the benefits which they would experience might suggest to those of us who employ others that it would be a good thing to pass on down the line.

The over-exercised class of workers needs more exercise for two main reasons; first, and most important, because the time devoted to light and rhythmic exercise in the open air shortens the time devoted to grinding, straining, over-taxing labor at their trade; second, because, as is the perpetual lament of all physical instructors, trainers, and gymnasium experts, very, very few gainful occupations, however vigorous the muscular effort they necessitate, develop men symmetrically and wholesomely.

One will over-strain, for instance, the muscles of the arms and back and do little or nothing for the legs, abdomen, and front of the chest. Another will develop to the point of abnormal hypertrophy one arm, or one limb, or one side of the body. Others involve an intolerable monotony of slight, rapid movements of a hand or foot, or even finger, or thumb, hundreds of times in a minute and thousands of times in the day, without the slightest strain upon, or interest for, ninety-nine per cent of the muscles and of the mind. The more laborious, cramping, and fatiguing these occupations, the more they demand good, wholesome, romping play as an antidote.

Men and women who are not, in the ordinary acceptation of the term, worked

very hard, from the point of view of muscular energy, but are kept constantly moving about on their feet, from bench to counter, or from loom to loom, or even in such outdoor occupations as collecting fares on a street car, will find their best protection against over-fatigue and breakdown in from one to two hours daily of relaxing, enjoyable play in the open air — hand-ball, baseball, tennis, dancing, or skipping the rope.

Play for the Farmers

Other groups of heavy muscle-workers require play in addition to the exercise involved in their toil for a somewhat different reason, and that is to develop otherwise unexercised and unused sides of their emotional and mental makeup. The farmer, and particularly the farmer's boy, who works hard at a wholesome variety of occupations, under ideal surroundings as to air and sunlight and with usually good food and fair opportunities for rest, is just as much in need of play as is the bank clerk, or the floorwalker, for the purpose of developing the communal and social side of his nature, bringing him into contact with his fellows, broadening his outlook upon life, and enabling him to keep up his enthusiasm for, and interest in, his solitary and monotonous toil.

In the old days he used to get this needed relaxation and social intercourse through husking bees and quilting parties and apple-parings and harvest and threshing festivals. But as these have gradually died out with the introduction of machinery and specialized methods of farming, something else must be introduced to take their place. The baseball nine and the football team and the dancing club, and even the golf club, the bowling alley, and the tennis club are now just as vitally necessary and important in the country as in the city and suburbs.

Indeed, absurd as it may sound, a Country Club is as necessary for farmers as for over-housed Wall Street men. Now that farmers are putting brains into their business, they are coming to recognize this fact, and I have actually heard of one county in Kansas where the establishment of an Inter-County Golf Club is under consideration, to which several of its most enthusiastic agriculturalist supporters purpose to come twenty miles in their automobiles.

As for the slaves of the loom, the counter, the factory, the cook stove, and the schoolroom, their vital need of exercise is as undisputed and as obvious as the law of gravity. Within twenty-five years I prophesy that the work of the world will be so re-arranged as to allow for play times as inevitably and as much as a matter of course and right as it now does for mealtimes.

The shrewd old medieval proverb "Meat and mass hinder no man's journey" should be revised to read, "Meat and play hinder no man's work." Instead of play giving us a distaste for work, as the lying old creeds of the ascetic and the Puritan in all ages have taught, proper and reasonable opportunity for recreation will make the hardest life-work as attractive as play.

The best work that even the most grad-grind of us do is work that we do because we love it, even as if it were play. The greatest problem which is facing the modern statesman, the thoughtful humanitarian, is whether the great and important work of the world shall be performed by the mass of toilers, healthfully, cheerfully, happily, or whether it shall be carried out, as too much of it now is, as a grinding, health-destroying, intolerable, monotonous task, stunting development, strangling hope, and murdering joy.

It is not just work that produces this unhappiness and ill-health, this gray and cheerless monotony and hopelessness, but the senseless, selfish, hidebound, and precedent-shackled manner in which our self-anointed leaders insist that the work must be done.

All the valuable, productive work now done could be accomplished without working anyone more than an average of six hours a day, leaving the balance of our waking hours for healthful recreation and the intelligent development of our highest and happiest powers.

It is not play that impels to drink and dissipation, but work! Two-thirds of

our vices are pitiful and distorted efforts to get, by oblique and unwholesome means, that opportunity for joy and emotional expression which is denied to us where we ought most to be able to secure it—in our life-work.

As for those eighteen millions of our future citizens whose occupation consists in confinement at hard labor within the walls of the schoolroom for five hours a day, no one now denies their need of, and right to, play. Play, indeed, is their chief business up to fifteen years of age and their proper avocation for five or six years longer. Their most important and vital need during their eighteen to twenty-three years of growth is to develop to the highest pitch those powers and possibilities which were born in them. And play will promote growth, which, after all, is the most important thing in the world—far better than any yet invented system of education.

In so far as the schoolroom interferes with symmetrical, healthful growth—which is as inevitable and irrepressible mentally as it is bodily—in so far it is an evil and a nuisance and should be abated. Give children plenty of play, plenty of food, plenty of fresh air and sleep, and answer half their questions, and there will be little need to worry about their formal education.

Of course, it goes without saying, that rhythmic, vigorous, joyous exercise in the open air is just as necessary for women as for men, for girls as for boys. There is nothing like a couple of hours a day in the flower garden, on the golf links, on the tennis court, or in a canoe, for keeping the overworked housewife, the responsibility-laden mother, clear in the head, sweet in the temper, and tireless in well-doing.

The instinct of the unspoiled young human animal will take care of this matter if we only give it scope. Girls are just as keen to run and romp and swim and wrestle and climb trees as boys are in the first decade, and it is far more the purblind intelligence and hen-brained tyranny of Mrs. Grundy, with her corsets, her skirts, her high-heeled shoes, and her petty hoard of maxims anent "ladylike" conduct, that check and thwart this tendency in later life, than it is any physical, or physiological, sex differences. A woman requires somewhat less exercise to keep her in health than a man does, and her natural tastes lead her into somewhat less violent and strenuous forms of games and sports, but she needs her modicum of exercise to keep her in health of body and balance of soul, just as vitally and as indispensably as a man does.

Tennis and town-ball and hockey and golf and skating and running and dancing are fine arts and appeal to the sense of beauty and our esthetic emotions just as truly as, and even more strongly than, music and drawing and fancy work, and are at least ten times as wholesome both mentally and physically.

If we could restore and revive something of the old Greek worship of beauty, of art, and of distinction, we should do more to make the lives and development of the better half of the race wholesome, symmetrical, and happy than by any other possible means.

Get rid of the false and cowardly asceticism that our religions have been preaching for twenty centuries and dare to live and enjoy life. A return of the grand old Greek joy of living, the spirit

> "That with a frolic welcome took
> The thunder and the sunshine,"

would be as healthful for our minds and morals as for our bodies.

PRACTICAL WING-SHOOTING

BY CHARLES ASKINS

Illustrated with Photographs

THE limits of this article will not permit me to treat shooting the various game birds at length. Indeed, full instructions for handling the ordinary varieties of game which fall before the shotgun in this country would require a volume of itself. The best that I can do is to give a few hints which the beginner may find worth consulting.

The marked characteristics of quail are that he lies best to the dog and rises nearer the gun than any other game bird of the uplands; he is found both in the open and in heavy cover; he can be pursued on foot, on horseback, and sometimes in wagons; the bevies break away all in a bunch, with a tremendous rush and whir of wings, with a startling rapidity only rivaled by the ruffed grouse; and he is a winged athlete, capable of swerving and dodging when occasion demands in a manner to shame a jack snipe. Parenthetically permit me to venture here the opinion that quail do not dodge maliciously, their powers in this respect being merely called forth by circumstances.

In an open, level, ragweed field, where the vegetation is from knee to waist high, Bob sails away on an even keel, as straight as an arrow, whereupon a right and left should be within the powers of the average shot. However, let trees and brush intervene and the course of the little bird is beyond the foresight of man; then, too, he will swerve so quickly as to escape a charge of shot that has been sent direct for him.

One of the difficulties of quail shooting lies in the very fact that would apparently make his killing a simple proposition, *i. e.* his rising near the gun. Let me illustrate: If a quail rose within ten feet of the gun and continued sailing around the shooter's head at a mile a minute gait, the chances are that he couldn't be killed in ten shots, both the bird and the gun changing angle with a rapidity beyond the ability of the mind to calculate. In the same way a close springing bird may change his angle with regard to the gun so rapidly as to entail a long and accurate swing before he can be covered.

The nature of the quail's flight frequently makes this long swing unavoidable. The bird may rise to the north, pass to the west, and be killed to the south. Had it been possible to foresee that the bird would swing about to the south before being killed, the gun might have been pointed there, rendering unnecessary a complex gun movement, but meantime the quarry would probably have gone in some other direction. The quail work that calls for care and skill is cover shooting, and the only safe rule there is to point your gun as near the bird as you can when he breaks and shoot as quickly as you can get on.

It is all well enough to give the trite advice not to shoot too quickly, give the bird time enough to straighten out, but half the time that this is done no shot will be fired at all. An old German hunting axiom covers this ground: "Any time you fail to shoot you have made a miss." We have all been out with the individual who witheld his fire because he "couldn't get on to that fellow," and he is a most exasperating companion where the other gun is waiting for him to shoot.

The quail shot must possess mechanical steadiness, rapidity of action, nerve force, and nerve control. Mechanically there is no comparison between following, making a half turn and cutting down a quail at fifty feet, and throwing up the gun with a five-inch swing to lead a mallard ten feet at fifty yards. Which of the shots will be the more diffi-

cult of accomplishment is a matter of training and experience. The quail shot must possess mechanics and nerve, the duck hunter, shooting knowledge. Personally I believe that quail work takes a great deal more out of a man, so that killing fifty quail will result in a nerve exhaustion that would not accompany bagging a hundred ducks.

Sporting writers are disposed to dwell upon the necessity for holding high in quail shooting, didactically stating that nearly all misses either go low or fall behind. Our literary gunners either get this idea from one another, accepting it without question as people do most of their wisdom, or their logic, so far as they have any, is that as the bird is rising from the ground, the charge must necessarily drop beneath unless care be taken to hold above. This theory really applies to pigeon shooting from the traps, originating from the demands of that sport.

The plain principle that should be remembered is that any bird flying away from the gun, beneath the line of aim, demands high holding whether or not the mark is rising; on the other hand, a target above the level of the eye may require low holding even when it is gradually rising. Let us make this plain. A bird rises near the gun and the weapon is pointed there, the muzzle being directed down toward the ground. Now the mark may fly away nearly along the ground, as pigeons often do, and yet the line of aim must steadily rise until the gun is nearly in a horizontal position.

On the contrary, if the bird rises sharply at the first bound to a height some distance above the gun and then goes off level, or even rises somewhat, the gun will first be elevated to an angle of perhaps forty-five degrees and then with the receding target must drop until near the horizontal. Applying this principle, we find that shots must be directed high for all outgoing birds that are beneath the level of the eye and low for all outgoing birds that are above the level of the eye unless they continue to rise at a very sharp angle.

I shall call attention briefly to the shots that are liable to go high; those in which the tendency is to fall under; the

A QUAIL SHOT IN WHICH FEW EVER BECOME PROFICIENT IS THE INCOMER.

manner of flight when the charge often strikes behind; and where the error will be leading too much. To begin with, permit me to repeat a statement previously made that in upland shooting only the occasional bird requires any great amount of lead. The obvious reason for this is that any target which rises close to the gun must in the nature of things go away from it and cannot maintain a right-angled flight for any great distance.

A bird may be readily overshot when he is flying straight away and perfectly level, in consequence of the line of swing being so very short. The gun comes to the shoulder pointing but a few inches beneath the target; then if it is brought up quickly the probability is that it travels above the mark while the trigger is being pressed. The problem of the shooter here is to start his line of swing sufficiently below the mark so that the finger can receive fair warning before

the time comes to pull. Another shot often going high is when the bird rises to some little elevation and then drives away with a lowering flight before the aim is secured.

One of the most troublesome of open quail shots to gauge is when the little chap rises near the gun to a height of twenty or thirty feet and then goes off level. The natural inclination is to swing after him, unconscious that he is really going down toward the horizontal line and that the aim must in many instances be taken at least a foot low.

Hard to Catch the Incomer

Another quail shot in which few ever become proficient is the incomer. Flying low as this bird does, should he be allowed to approach within less than forty-five feet it is almost impossible to strike him owing to the rapidity with which the gun must be moved to keep pace with the flight. The nearer the bird comes to you the faster the muzzle swing, and at that the bird either outpaces you or you jerk ahead blindly without any aim and kill only by accident.

The incomer should be fired upon when fifty feet or more away, should he be seen in time, or, failing to get in the shot there, turn on the bird and take him after he passes by. When attempting this last feat always hold under such a distance as would appear a sure miss, usually a foot and a half unless the bird is rising.

Shot charges should be delivered high when the game rises so wild as to require snapping before reaching the end of its climbing bound, the snap shot being demanded to prevent the quarry getting beyond range. Under such circumstances the line of aim would not follow the line of flight, but would pass straight up in front of the mark to the connecting point. Such shots as this more often occur in prairie chicken shooting than with quail.

Another problem that necessitates quick perception is when the bird meets some obstruction to his flight. The inclination of a quail is always to jump over rather than dodge under anything that comes in his way, the rise beginning some distance ere he reaches the obstruction. Hence watch your mark closely, should he be winging toward a low tree or brush, for he is nearly certain to rise, and it is then a safe rule to hold over anyway.

It should be known that the majority of under shots are due, not so much to the flight of the bird, as to the nerves of the gunner. When there is need of quick action, in a semi-snap or rapid swing, with the sportsman's nerves tensely strung, there is more than a possibility of the finger betraying the judgment by letting off ere the piece has quite traveled up to cover the mark. In every instance of this kind the charge must either go low or behind the bird, and usually both.

Take it for granted that in upland shooting two-thirds of the misses that fall beneath and back are the result of rebellious nerves. Nerves are especially hard to manage where the swing is a long one, which we have shown it must often be with quail, and hence the pigeon shooter's axiom of "shoot high and in front" might apply to Bob White, only it should read "don't pull until you are on." If you cannot avoid doing this, harden the trigger of your gun.

Individuals differ, and the personality of the gunner must always govern largely, but the writer has always had his best success in quail shooting by firing a semi-snap shot with the first barrel and swinging after with the second. With practice, too, it will be found that the gun can be swung with greater ease and certainty, and a better view maintained of the mark, when the head is held upright, free of the gunstock.

Prairie chicken shooting was once such a simple business as scarcely to deserve the name of sport, for the half-grown chicks were killed in August while still under charge of the old hen. At present the hunting of these grouse begins with October, and the work upon the mature and powerful fowl is not only elegant sport, but of a nature to test the skill of any man. The bevies now become broken up, scattering about singly, in pairs, and small bunches, and then with the approach of winter packing into coveys of several hundred. The larger

the packs or the colder the weather, the wilder chickens become.

The very finest of prairie grouse shooting is to be had on the occasional warm, sunny days that come in November and December. Then while the big fellows are not tame, and certainly not tame shooting, they will frequently permit the gunner to approach within half gunshot, and a half dozen of the powerful birds in the strength of their lusty growth and the beauty of their winter plumage will afford intense satisfaction to any sportsman who prefers quality to quantity.

The full-grown pinnated grouse is rather more powerful of wing than a quail, though from his size he seems to move slower. He is, however, not so sharp in getting away from the mark as his little cousin, and hence if he lay to a point like the latter would be easier shooting, but the late fall chicken doesn't lie as close as a quail, the rise being anywhere from twenty yards to a long gunshot. It follows that straightaway chances are the exception rather than the rule, and the distance of the spring makes it needful that nearly every shot be well judged and given its proper allowance ahead. Almost invariably daylight should be seen between the point of aim and the bird, the lead being anywhere from a foot to eight feet where an old cock is crossing at forty-five yards.

IT'S HARD SHOOTING WHEN THE BIRD RISES CLOSE AND SWINGS AROUND TO LEFT OR RIGHT.

In the course of a day upon the prairies nearly every description of shot known in wing shooting may be afforded. Occasionally a bird will rise under your feet and drive away low over the short coated prairie, but the majority will be quartering shots at every conceivable angle from a straightaway to a direct incomer. Frequently the cackling chaps will spring to a height of thirty or forty feet, and then drop away with whip and twist and flash of wings toward the distant horizon—the most careful gunner finding plenty of empty space along these curves of flight. Numbers will cross at right angles, demanding as much lead as a mallard duck, and sometimes a pack will come stringing along like English driven game, yielding the sportsman as hot a thirty seconds as he ever experienced.

The chicken being a heavy bird cannot reach top speed so promptly as a quail, and they have a way of climbing for the first few yards that keeps them within gunshot, when a quail or ruffed grouse would be putting such space between himself and the gun that shooting at him would be useless.

I should estimate that a quail would fly forty-five feet the first second after his jump, a ruffed grouse from forty-five to fifty-five feet, a chicken perhaps not above thirty, though in doing this he might rise to a height of twenty feet. As a consequence pinnated grouse can sometimes be bagged that take wing forty yards from the gun, but it calls for a high degree of shooting skill to gauge both his speed away from the gun and his angle of elevation. With these long range shots the gun should always come up to the point of discharge with the least possible lost motion, something of accuracy being sacrificed to prompt delivery of the charge, care being taken to shoot plenty high—sometimes as much as two feet above the climbing fowl. This work has more resemblance to

jumping ducks than anything quail shooting develops.

The mature chicken is suspicious, preferring rather to trust in the strength of strong wings than to any ability to hide. With the wild fellows it is better to chance a miss with a rough snap that has power to drive the pellets home in place of a precise aim that could only rattle the shot upon his stiff wing feathers. Nevertheless, I have found the quick half snap to be the most killing style, care being taken to steady the gun before lifting it to the mark.

The second barrel will naturally follow the first in a quick swing and should snap in after the first with the same celerity as in pigeon shooting from the traps. The best policy in all wing shooting is to consider any bird near enough for the second barrel that was within reach of the first. Otherwise an indecisive second barrel will grow upon you to the detriment of all your shooting.

Where the utmost rapidity is requisite the obvious thing to do is to get your weapon to shoulder with the flash of the springing bird; then in the slight interim needed to steady the piece the calculation for lead can be made, and the charge sent there instantly, keeping in mind not to jerk the weapon with uncontrollable roughness. With the shooter walking up his bird, and of course without having gun, legs, or body in shooting position, a grouse can be stopped by a fast man within five yards of where it breaks cover, the time taken to accomplish all the separate, complex movements not being over half a second.

Only the wisest old chicken dog will be found serviceable on November grouse, an animal which can scent his game at from fifty to two hundred yards and one that will not attempt to approach it except in close company with the gun. On birds that have packed and become excessively wild, two men may often work together to advantage, the one hiding in the grass while the other drives the game over him.

The ruffed grouse is the wisest of all his tribe, of which all have brains, and as a winged sprinter is the quickest away from scratch of anything that flies. The quail dodges with phenomenal suddenness when anything obstructs his path, the wind sometimes unbalances a jack snipe, giving his flight the acme of eccentricity, but the partridge does it all deliberately and maliciously. With gunner and ruffed grouse, as with pitcher and batter, it is a guessing game, and whichever outguesses comes off the victor.

Flush a quail in the thick woods and should there be an opening he may fly straight down it; a partridge might, too, but be sure he will not. I have seen one of the birds sitting before a dog's point in a perfectly open spot, but there was a tree within twenty feet. I planned to get a shot at him before he could reach that tree, and ordered the dog to crawl in while I stood with gun ready. The wise old scoundrel got up with provoking deliberation, spread his tail, legged it around behind the tree and then took wing with a tremendous hurrah.

Shoot, Whatever You Do

The thing for the ruffed grouse hunter to do is to shoot and never count shells. Should the bird fly behind a tree and not reappear, shoot the tree in two if you can. When he simply roars in beyond the limbs, make no hesitation, for that is the very place to kill him. Swing along on the line of flight, so much of it as you have seen, take it for granted that he is still going the same course, at the same rate of speed, and when you know you are right pull with as much confidence as though the bird were yet in plain sight.

In the rare times when you catch a ruffed grouse in the open, as in little isolated clumps from which he must fly, or along old, overgrown fencerows, he is no more difficult target than a quail or chicken. He is quicker away from the gun in heavy cover, but in full flight has no greater speed than either of the others. Generally no great amount of lead need be taken, but the shots he affords are of such diversified character that there can be no such thing as systematic partridge shooting. The marksman must simply suit his style to the nature of the shot as it comes.

When there is but a ten-foot opening in the trees snap the bird there, no matter what the odds against a kill. The ruffed grouse, by the way, is the only bird upon which the ethics of sportsmanship should tolerate the use of a cylinder bored gun. When this bird is killed fairly upon the wing I should not feel disposed to lecture the man who used a bell muzzled piece.

Like the grouse hunter, the partridge dog just happens to be one. If nature hasn't done a great deal for him man can do little. Training can teach the dog to hunt close to the gun, to flush to order, and to be stanch, and then he may or may not be a partridge dog.

Next to purely open shots the easiest partridge problem is when the bird is climbing through the thin limbs or just as he tops the undergrowth; the hardest is where he drops, like a bullet, out of a tree and skims the ground. One partridge killed in three shots is good shooting; fifty per cent on quail is of about the same order, and three out of four chickens.

The writer once hung a jury because he knew the other eleven fellows were wrong. They wished to clear a man of the charge of murder who had shot another in the back, the plea being self-defense. Utterly regardless of the risk of being in a minority of one, I propose to maintain now that snipe are the easiest to kill of all our common game birds with the exception of the rail which at best doesn't deserve to be listed as game. That the snipe is a difficult shooting proposition seems to be one of the popular sporting errors that appear to have been accepted as an inheritance. Naturally the fiction writer and the book-learned gunner perpetuate the error, considering themselves surely upon safe ground when dwelling upon the difficulties of snipe shooting.

It is true that jack sometimes flies very erratically on windy days when he finds trouble in balancing himself while gaining sufficient momentum to progress steadily. Like other birds, too, his temper is affected by cold, raw weather, or when he is hungry and food scarce; at such times he has little hesitation about getting up well out of range and leaving promptly for some more genial snipe world. When flushing wild it is quite a literal statement of fact that snipe are hard to hit, for if tied to a post out of gun range not many would be hurt. It appears, too, that a snipe really requires some ballast of fat if he is to sail upon an even keel, the thin little chaps surprising themselves with aërial gymnastics.

But in actual snipe weather, warm, sunny days, with cover good and food plentiful, jack snipe shooting is little more of a feat than smashing clay birds, than which there is no simpler shotgun work with which to compare.

The statement often made that the shooter should always withhold his fire until the bird is from twenty-five to thirty yards distant is the height of absurdity. The same shooting principle applies to snipe that holds with any other game bird, catch him before he becomes hard. When these birds are lying well to the dog and gun they get up lazily and float away with long, easy bounds. The first jump may carry his snipeship twenty feet, and then with a twist of his body he covers half a dozen yards at a more or less acute angle, but at the end of one of those aërial leaps the bird hangs for the fraction of a second, and there you can almost catch him with a rifle bullet.

Where to Catch the Snipe

The preliminary spring with accompanying saucy "scaipe" should warn the gunner and the end of the next leg of the zigzag ought to find poor jack ready to be smoothed down and placed in the bag, the man of ordinary quickness striking his mark inside of sixty feet or not over forty-five from where it broke cover. The motion of a snipe is really something like that of a skater who shoves out first upon one foot and then the other, the bird, however, making longer and quicker strokes, which become very choppy when he is sprinting.

There is a bit of up and down movement to the flight of a snipe under some conditions, but not a great deal, and when he is passing or circling the gun, the in and out motion is little in evi-

SHOOT HIGH FOR A BIRD TOPPING THE BRUSH.

dence, and he flies practically as level as other birds. When going straightaway his crisscross style is most apparent, and such shots are the hardest in consequence. It is this feature of his flight that makes hunting down wind the most effective, since the bird has a preference for rising against the wind, and will then beat back, affording a crossing shot, while should the shooter walk up wind his target would likely be a straightaway. Nevertheless, up wind or down wind, should the quarry rise within twenty yards, he cannot escape without hazarding both barrels, one of which will generally suffice.

The movements of a snipe should never be followed by the line of swing. To do so would render his flight as hard to solve as sporting literature has pronounced. Get the gun up pointed under him and then snap ahead on one of his long bounds before he can tack. The thing is so easily done that I will leave it to any experienced snipe shot if there is any great feat about cutting down twenty of the little beauties straight.

Indeed, this bird is one that calls for a hunter's forbearance in the matter of bag. Some years ago immense bags of snipe were common. The record so far as I know was something over six hundred birds killed by a Louisiana planter in one day. In the vicinity of St. Louis two hundred snipe a day were not considered shooting worthy of special note, and no snipe were in unless fifty could be killed. To-day twenty-five longbills should be considered the limit per gun, though the number may be secured in a few hours' shooting over favorable ground.

A clever shot on snipe should account for eighty per cent of the birds shot at, a performance not to be expected with any other upland game bird. They are not only a simple proposition to hit but are easily killed, which permits the use of lightly charged and small gauge weapons.

Duck shooting is the billiards of work with a scatter gun. The uniform flight of the fowl, the absence of any interference with the aim, the preparedness of the shooter from having been given due warning of the approaching bird, tend to place every factor of the shooting problem at the gunner's command. Always, however, the hunter's skill and experience must equal the demand, the whole situation resolving itself finally into a knowledge of where to hold.

In quail shooting a man's difficulty lies in being unable to place his charge to the spot which he knows is right; in duck shooting the main question is where to point the gun, the pattern being readily sent to the estimated lead. It is nearly as easy to direct the aim ten feet in front of the mark as two feet, always provided you know it should lead ten feet and not two or six. Therefore, conclude that every successful shot must be made with an absolutely correct estimate of speed and flight and distance of mark. When this can be done with regularity the pleasure of verifying the judgment with a long, clean kill is su-

perior to that connected with any other style of shooting.

The most that I can do here is to call atention to some of the various shots which the wildfowler will be called upon to solve as primary lessons in the duck shooting game.

The overhead, incoming shot is made by throwing the gun beneath the target and pitching it rapidly upward until it passes the bird, firing the instant the mark is quite hidden by the barrels. Little conscious allowance ahead will be found necessary in making this shot, but the speedier the mark the more rapidly the gun should be swung. It can readily be understood that with a rapidly moving muzzle a greater lead will be taken automatically at a long distance than a short. In any event it has been found in practice that swinging the gun from beneath to cover and hide the mark will usually result in a kill. This is probably the easiest shot made in duck shooting for the first barrel.

No sooner, though, has this first load been fired than the second charge has its work cut out for it. Many species of ducks will tower with the bang of the gun, maybe rising straight into the air or even beating back upon the course they came. In consequence the left barrel if not sent in promptly will have to be fired well above and possibly, paradoxical as it may seem, behind the duck, considering the route it was traveling when the right was pulled. Most likely the scared flock will merely sheer off, mounting at the same time, and the new angle of flight must be instantly reckoned with if the second shot is to go home properly.

A duck that is coming at a high clip which he deflects into a sheering, curving tower is about as hard a nut to crack as comes under the wingshooter's mallet. One half second may take the mark out of range, and a man's thinking apparatus must work fast.

Certain other varieties of duck, like the bluewing teal and the canvasback, will not flinch or tower, but continue directly on with redoubled speed. Now the bird will pass the gun which must turn on him, affording quite a different shot from the other. Then in order to lead the hold must be low—well under—sometimes as much as three feet, but the farther the mark is allowed to go the closer it is covered, since with distance it comes more directly into the line of fire.

Many birds passing well out will also swerve and rise with the report, which necessitates a lessening of the front lead to direct the second charge higher. A certain duck might be killed by shooting eight feet ahead of him, but to kill his mate with the second barrel it should go only two feet in front and two feet high. On firing the right barrel an experienced shot ought to be able to foretell pretty well what the remainder of the flock would do by knowing the species of fowl. The acme of duck shooting is to make both shots tell, the indifferent performer frequently being effective with the first.

It will usually be discovered that birds which pass to the right call for a greater lead than those flying to the left, because a right-hand gunner swings less freely and rapidly in that direction. In the case of the writer, a third more lead must be given when swinging to the right. Of course the opposite would be true were the shooter left-handed.

Doubling on the Ducks

The surest double is to be made while the birds are approaching the gun, never permitting them to pass by. Turning to shoot in a restricted blind is trying and more so from a duck boat. If the ducks are close up take the leader first, but if farther out select the rear fowl and those closer up can hardly escape being shot at. There is room for coolness and good judgment in this. Should you choose the leading bird and fire too quickly, those behind him may climb out of reach, while trying for a rear fowl after they are well in may force a difficult turn on the others.

A descending bird is a hard shot, both by reason of his increased speed, and because a gun cannot well be swung down, and the descending line of flight must be met by a still gun, as in snap shooting, causing a loss of all the advantage of swinging with the target. A

rising bird is far easier, and hence it is well in decoy shooting to pull just as the fowl is hovering to alight, or take him in his upward climb away from danger.

In jumping ducks close study should be given to the variety of fowl we are starting. A mallard usually climbs nearly straight upward, and a shot just in front of the bill should get him. On the contrary, a teal scurries off low along the marsh, and the holding must be well ahead and only a trifle high. A widgeon makes one great bound upward and then goes off at a sharp angle. If quick enough the hunter's surest shot on the widgeon is at the end of this leap when the duck will be about ten feet high. Any dwelling upon the aim here is fatal since the bird will change his line of flight acutely, and a long swing will have to be made after the speeding mark.

A pintail climbs and gradually bears off, at the same time circling the gun. When jumped he is one of the easiest birds to kill, because of this circling habit which keeps him within range of the gun for such a length of time. A greenwing teal behaves very like a mallard but is quicker in action. It is seldom that any except fresh water ducks are killed by jumping them from the edge of a marsh.

GETTING THE MOTOR BOAT READY

BY STILLMAN TAYLOR

THE life of a motor boat is dependent upon the care it receives from the owner, and that the soundness and attractive appearance of the craft may be preserved to a ripe old age, the question of proper maintenance should be given consideration. As the "old hand" well knows, the depreciation of a boat is likely to be the greatest during its period of idleness. If it has been properly overhauled, kept dry, and well protected from the weather during the winter season, the coming of spring will find the floating home in excellent condition, and the work of putting it into commission will consist principally of cleaning, painting, overhauling the power plant, and attending to the many little repairs and alterations which go so far toward making the little craft cosy of cabin and ship-shape from stem to stern.

On the arrival of settled weather, a warm, sunny day should be selected for the initial step of fitting out the boat for the season. The covering boards and protecting canvas should be removed, skylights, hatches, doors, and ports should be opened wide to admit the air and thoroughly dry out the interior. The flooring, locker covers, and everything movable should be taken out and the whole craft stripped preparatory to a thorough cleansing. The decks should be swept clean and the interior brushed out to remove the loose dirt of a year ago, after which the whole inside of the boat should be given a good scrubbing.

This part of the work should not be neglected nor should it be half way done. Go at the work scrub-woman-wise, with a bucket of hot water in which a handful of washing compound has been dissolved. The bilge should not be forgotten, and while out of sight this part of the ship should be made sweet and clean. While cleaning up the bilge do not forget to clean out the limbers, that the water may quickly drain to the well. The pump should also come in for its share of attention, the strainer cleaned or renewed if necessary, and the lead pipe poked clear of any shavings or fluff that may have accumulated to stop the flow of water.

If inside ballast is used, this will have to be removed before the bilge can be cleaned. It is a good plan to mark each piece as it is lifted out, to avoid any

possible difficulty in reballasting the boat to its proper water line. If the ballast is of iron it should be painted with a coat or two of red lead to prevent further rusting. This matter is not always given much attention, although a dirty or rusty bilge bespeaks a poor skipper, as well as a dirty, rust-stained craft.

Indeed, the boat should be thoroughly overhauled, cleaned both fore and aft, and any needed repairs promptly attended to. Lockers, drawers, and cupboard doors are very prone to bind, and a few strokes of a plane may be required to make them work smoothly again. The timely use of a screw will cure a badly hung door, or repair a board that has checked; a nail or two will fix that creaking floor, and a little putty will render deep gouges, cracks, and unsightly scratches much less conspicuous.

That bugbear of comfort—small leaks—is bound to occur at more or less frequent intervals, and these should be looked for at fitting out time and either caulked, stopped with a plug of wood, or filled with marine glue. Perhaps the most likely place of all for leaks is around the stuffing gland, and the boatman should make it a point to repack and snugly tighten up the stuffing box before launching. The closet connections leading outboard should likewise be examined and particular attention should be taken to ascertain if the pipes are clear and the screen of the intake is not badly corroded or clogged.

When all these little things have been put in shape, the boatman naturally turns his attention to the hull, for the outside of the ship requires more or less labor to get a smooth skin of paint and clear, bright, varnished trim, so necessary for a well dressed boat. However, painting and varnishing are a job demanding considerable care as well as moderate skill, and if the boatman would avoid the rough and patchy workmanship so often apparent when the average man turns painter, he should begin this work right. At the outset he should make up his mind to devote sufficient time to the work in hand and not try to do it all in a day or two.

As the object of painting is to protect the wood and metal from rust and decay, as well as to present a smooth and attractive surface, it should be obvious that only the very best brands of pigments and varnishes are selected. Good stock is naturally more expensive than the adulterated kinds, but in painting, as in many other things, the best will always prove the cheapest in the end. Although the writer prefers to mix his own pigments according to the work to be done, the average amateur will probably find any of the old and reliable brands of mixed paints much more convenient. For the outside of the hull, it is best to use one of the several brands put up especially for this purpose and known to the trade as "yacht white" and "yacht black."

If the boatman prefers to mix his own pigments, the writer would advise the use of an almost pure turpentine paint. In working up a paint of this kind procure the best keg lead, stir it smooth with a little raw linseed oil, and thin to brushing consistency with pure turpentine. The advantage of a turpentine paint lies in the fact that it forms an absolutely smooth flexible skin, which rubs off just enough to keep the surface smooth, free from a heavy coating of pigment, and thus prevents cracking and peeling.

To Get a Good White

Such a paint, well brushed out, gives a splendid white surface, but if a more intense white is desired, a very small amount of zinc white may be added. The zinc should be used sparingly, however, as it has a tendency to make the pigment brittle and so encourage cracking and flaking. Many boatmen add just a wee bit of blue to give a bluish cast to the white, and while this "blue white" has some admirers, the writer much prefers the regulation lead white. It is a matter of individual taste. For decks, cabin tops, floors, seats, and other woodwork, more linseed oil should be added, and a little good dryer may be used when mixing enamels for inside painting.

As good painting cannot be done with stiff and stubby brushes, the amateur should procure three or four good

brushes and make it a point to keep them in good order. For outside work, two or three flat wall brushes of four, three, and two-inch widths will be found convenient, and two or three round or oval sash brushes will be needed for small work. In selecting brushes it always pays to buy a really first grade brush with long and thickly set bristles. For varnishing, a good beveled varnish brush two or two and a half inches wide is a handy tool for general use.

In picking out brushes, it may be mentioned that gray or gray mixed Russia bristles are far superior to the cheaper black China bristles. A good brush should be properly looked after and to prevent shedding of the bristles on the work, each new brush should be well "tightened" before it is used. To do this, separate the bristles and pour a teaspoonful of water on the head of the handle; then stand the brush bristle end up until the dry wood has absorbed the water.

Another good way practiced by many painters is to soak the brush in linseed oil some six or eight hours before it is put in use. In any case, the beginner should not make the common mistake of soaking the brush in water, as this is certain to spoil the tool by making the bristles flabby. Brushes sold for painting and varnishing are known as "cement set" and should not be used in shellac or other finishes containing alcohol. For this class of work "rubber set" brushes should be used. A really good brush should last for at least three seasons' use, if well cared for and not allowed to dry full of paint.

Before using, a new brush should be dipped in paint or varnish and drawn several times across a board to work out any loose bristles which are too short to be fastened in the ferrule. When not in use the bristles should stand in linseed oil, and before laying aside for the year, the brushes should be thoroughly cleaned and the old paint and varnish washed out with turpentine or kerosene, then shaken dry. If this is done, the brushes may be laid away, out of the dust, and will be found as good as new for another year.

If the boat's sides are found to be fairly smooth and the use of a scraper is not deemed necessary, the work should be well sandpapered and any bare spots of the hull touched up with a white lead and oil primer. It is well to take a look at the water line also, and in case the dividing line is not well marked it should be cut in deep enough to be easily seen after the top sides have been painted.

The writer has found that this is most easily done by bending a long flexible slat or batten to correspond to a section of the waterline curve, and marking this line with the tang of a file. It is, of course, necessary to shift the batten now and then to correspond to the original marking, as only a small section will lie along the correct curve. An assistant will be of help in doing this work, otherwise the batten must be lightly tacked to hold it in the proper position.

The boat is now ready for the first coat of white, and this should be well brushed out. For a durable and attractive job, it is much better to give three fairly thin coats than to attempt to cover with one or two heavier coats. Each coat should be allowed to dry before brushing on the next. When the last or finishing coat is dry, the bottom should be smoothed with sandpaper and given a good protecting coat of red, brown, or green copper paint.

Scrape Off the Old Paint

In case the old painted surface is rough and flaky, as a result of repeated coats of an oil paint, the boatman may patch it by scraping off the loose paint and smoothing with sandpaper. It is impossible, however, to get a nice smooth surface by this method, and if the amateur would put his boat in anything like its original condition, all the old paint must be removed. Scraping is undeniably hard labor, yet if this work is turned over to the boatshop the owner must be prepared to foot a rather stiffish bill. However that may be, it certainly pays, so far as appearance is concerned, and if the boatman elects to do this work himself, he should first be provided with the proper tools.

To scrape off the old "shell," two or

three steel scrapers are required. The regulation or triangle-shaped boat's scraper is a good tool, but the best scraper is made by turning over the end of an old flat mill file (hoe shaped). Old discarded files of this description may be picked up in the scrap pile of almost any machine shop, and your nearest smithy will turn the end, temper it, and grind to a keen cutting edge.

To scrape off the old hardened paint with the aid of scrapers alone is a slow and laborious job and much elbow grease may be saved by using a painter's gasoline torch, which blisters the old pigment, thus making it easily scraped off. It takes a few hours to acquire the knack of using a torch, however, although it is a good method.

The best method for the amateur is to use one of the paint and varnish removers. These preparations are not costly and, considering the work they do, their use is distinctly a good investment. The remover is simply brushed on and after a few minutes' soaking, the paint and varnish may be scraped off like so much putty.

The "bright work" of the boat also needs attention, and if the craft was properly laid up for the winter, the varnished surfaces will be found in good shape, and only require to be well sandpapered and cleaned before refinishing. However, if the varnished work has been neglected and has worn off so as to expose the wood underneath, the "black wood" must be scraped away. The paint remover may here be used to good advantage, and when the work is bright and smooth—and not until then—it is ready for the varnish.

As varnish lacks the durability of paint, at least three coats are necessary to protect the wood from the weather. The boatman should not forget that "there are varnishes and varnishes," and not throw away his labor by purchasing a cheap brand. Buy the best outside spar varnish you can find, for other kinds are composed of cheap gums and, while well enough for inside finishing, are unsatisfactory for outside work. A nice warm day should be chosen for varnishing, and the varnish should be well brushed out.

As the undercoat cannot harden well if the second coat is brushed on before the first has become thoroughly dry, at least twenty-four hours should elapse between coats. It may be mentioned that it is never advisable to thin varnishes intended for the outside. If found too thick to brush smoothly, the varnishing job should either be postponed until a warmer day, or the varnish pot may be set upon the back of the stove to warm slightly.

The motor should be given a thorough overhauling every season before the boat is put into commission, and as proper maintenance is not possible unless the entire power plant is "knocked down," this part of the fitting out labor should not be neglected. In beginning the motor overhaul, the boatman will avoid much future trouble by first providing two or three wooden boxes to contain the different parts. By following out this suggestion, the many small parts are readily found when they are needed in putting the motor together.

Taking the Motor Apart

In knocking down the engine, first remove the water and fuel pipes and their connections, the carburetor, lubricator, magneto, throttle controls, and all pipe leads. A systematic procedure will ensure a good workmanlike job, and it is well to clean each part thoroughly—not forgeting screws, bolts, and other small fastenings—as soon as each part is removed.

This done, the cylinders, which are generally cast separate or in pairs, may be removed by unscrewing the anchoring bolts and lifting the casting off the pistons. In the case of fours and sixes, this plan is much less laborious than to uncouple the big ends of the connecting rods and attempt to lift the whole mass of metal off together.

In lifting the cylinders off their pistons, care should be taken to pull them off with the pistons in an upright position, otherwise there is a probability of springing the crankshaft and rods out of true. Providing the motor has not been abused, the cylinders and pistons should be in reasonably good condition. Some

little carbon will have accumulated, however, and this should be removed. For all ordinary cases the cylinders may be cleaned with kerosene to soften the carbonized deposit, which can then be easily scraped off.

The pistons should then be overhauled, and if they are in good condition, the faces of the rings will appear smooth and bright. In case their bearing surfaces are found to have sooty marks running across them, it indicates that the gas is blowing past the rings, and the worn rings should be renewed. Owing to the fact that good compression depends upon a snug fit between piston and cylinder, the amateur should take the precaution to file or punch a check mark on each piston before taking down, thus avoiding the liability of assembling the pistons in the wrong cylinders. While this little detail is not always observed, it is, nevertheless, worthy of attention, and the writer has frequently traced poor compression in the motor to faulty assembling.

Watch for Wear

The piston rings should be removed and the old oil cleaned out from the grooves. The rings should be also marked that they may be assembled in their respective grooves. Examine the wrist or piston pin, which should be a tight fit in the bosses. If found loose, tighten up the set or anchoring screw, or put in a new pin as the occasion demands. It is, of course, evident that no appreciable wear should be allowed, or the pin may work out of position and ruin the cylinder walls. The most likely spot for wear is the part fitting the bushing of the connecting rod. If much play is evident, a new bushing will be needed to secure the proper fit.

The connecting rod bearings should be tested for wear, and if much play or looseness is found, a little metal may be filed from the flats of cap and brasses. It is well to proceed cautiously in making this adjustment, removing but a very little metal at a time and often trying them for a proper fit. These bearings should fit fairly snug, though not so tight as to cause binding, which renders the rod stiff, causes rapid bearing wear, and pulls down the power of the motor.

These bearing surfaces are purposely made sufficiently large to prevent wear, and if kept clean and well lubricated to afford a slippery surface, are not likely to require attention. If an examination discloses deep score marks on the bearing, it should be smoothed by scraping. This work demands considerable skill, however, and the boatman will find it best to enlist the services of a good machinist.

The main or crankshaft bearings should be tested for play and any considerable looseness taken up. Practically all engine builders make provision for adjusting bearing wear by means of thin strips of brass or other metal. These strips or "shims" are inserted between bearings and if the bearing becomes loose through wear, the removal of one or more of these shims will generally effect proper adjustment. It often happens, however, that the metal shims are too thick to give a snug fit, in which event the amateur may insert paper shims to secure the desired adjustment.

Although scraping in a bearing is not beyond the capabilities of the average boatman, work of this character must be very carefully done, and in case the bearings are found rough and scored, it will probably be more satisfactory to employ a machinist for this purpose. But for amateurs who are blessed with a goodly amount of spare time and have a liking for doing things with their own hands, the following points will, if carefully adhered to, insure a smooth and workmanlike job. For scraping in the bearings, many skilled workmen prefer to use a scraper made from an old file, turned in various convenient shapes, ground to a keen cutting edge, and evenly tempered in oil. For the use of the amateur, who knows nothing of tool making, a much quicker and smoother job may be done with the regulation set of scraping tools made especially for trueing up bearing surfaces.

A set of scrapers may be had from any motor boat supply store and generally come in sets of three or six tools of different shapes. A set of three "mound"

curved bearing scrapers will be found most convenient for the amateur's use and will be much less difficult to use than the improvised tools. Since scraping and adjusting of the bearings require much careful labor, the beginner should proceed slowly and try to scrape the metal as evenly as possible, letting the second cut of the scraper overlap and thus smooth off the edge of the ridge left by the first stroke of the tool.

It is important to scrape away only a very little at a time, and the scraped surface should be tried frequently for a proper fit. A little bluing mixed with oil and brushed over the bearing will indicate just how much scraping is necessary to render the bearing smooth. The crankpin bearings are worked up in the same fashion, taking off only enough metal from the caps to secure a snug fit with only enough play to prevent stiffness.

The valves will need attention if the motor is of the popular four-cycle type, and grinding in is an easy task if the beginner will but follow a few simple directions. For doing this work powdered glass, emery, and pumice are used, but the writer prefers to use emery of a grade known as 120. A convenient way is to put a small quantity in an old tin cover, add a teaspoonful or two of kerosene to form a rather thin paste, then add a few drops of heavy lubricating oil to give the grinding mixture more body and prevent running.

Place a small amount of the grinding paste on the valve and its seat, insert a screw driver in the slot cut in the head of the valve, and rotate the valve on its seat. To do this, rotate the handle of the screw-driver between the palms of the hands. It is not desirable to use any greater force than is necessary to turn the valve, and a light pressure is productive of better workmanship. The valve should be lifted occasionally, turned partly around, and the grinding resumed. This is to prevent the abrasive from "balling up" and also scratching the surfaces.

The grinding should be kept up until both the valve and its seat are smooth and bright and quite free from any pock marks or scratches. It is, of course, necessary to renew the mixture from time to time, but it is well to remember that a very little emery and plenty of kerosene and oil will grind faster and very much smoother than will a thick paste or a larger quantity of the abrasive. In case the valve is very badly pitted, much time may be saved by first smoothing the surface with a flat file. If the stem of a valve is found to be worn thin just under the head, a new valve should be inserted, which must be ground in in the same manner as an old valve. This is important to obtain good compression. When all the valves have been ground in, the valves and their seats should be cleaned off with gasoline, making it a point to remove every particle of the grinding mixture.

And last, but by no means least, in importance is the steering gear, which should be looked over carefully. The gear and tiller lines in particular should be examined throughout their length for worn and frayed spots. It takes but a few minutes of the boatman's time to render the steering lines taut with the turnbuckle, replace a faulty sheave or fairleader, or splice in a new length of tiller line, but neglect to make these needed repairs may result in a serious accident, or perhaps mean the loss of the boat, if the steering gear binds or suddenly parts at a critical moment.

Other small details about the boat should be given equal consideration, and when the boat finally slips down her ways there is much satisfaction if the owner can vouch for the thoroughness of the spring overhaul and begin the summer's voyage without fear of breakdown to mar the pleasures of the cruise.

PLEASURE WITH THE PISTOL

BY EDWARD C. CROSSMAN

Illustrated with Photographs

THE desire to shoot a gun of some sort is inherited by most of us from gun loving ancestors more or less removed. The fact that more of us do not shoot a gun is due mainly to lack of opportunity or to the fact that a stern parent persuaded us by various woodshed interviews that the gun was invented by the Evil One and all improvements since were patented by the same party.

There are few of us who do not go afield during the season when the weather is pleasant and the city heat makes anywhere else seem preferable. Likewise most of us weary of lying on our backs, watching the clouds and being bitten by the gnats. Lucky then is the man who has a handgun with him to keep dread ennui at a respectable distance.

The reasons for the pistol not being the most popular of all our weapons are, first, the sinister reputation of the one-hand weapon as an instrument used mainly by policemen, burglars, or worse, and, second, its supposed inaccuracy.

It is as fair to condemn the horse because some of the most highly developed members of his kind are used to fleece suckers as it is to forego the pleasures of the pistol because its small size makes it part of the kit of the outlaw. The fact that the last fifteen years have seen the revolver taken up by thousands of enthusiastic shooters and that the records made by them would puzzle a rifleman to duplicate sufficiently answers the charge of inaccuracy. The revolver is not inaccurate, it is merely hard to shoot with accuracy. In other words, the accuracy lies a few inches to the rear of its grip.

The hand gun can be slipped into a grip, a lunch basket, a holster under the coat, or even into a pocket. Its food for a day's work occupies the space of a pocket, while the pleasure to be derived from an intelligent use of the gun can with difficulty be accommodated in a box-car. In the .22 caliber or with the light loads the pistol is practically noiseless, it is out of sight while you travel, it is as accurate as any rifle, and its use is an accomplishment which may stand some day between you and the loss of your property or your life or may prevent the commission of serious crime. The man who fails to instruct his women folks in the proper use of the pistol should feel that he has been remiss in his provision for their safety.

The first step in pistol shooting—that of "catching the hare"—is one to be taken not with precipitation nor with the deep wisdom gleaned from the reading of magazine advertisements, nor yet from the valuable experience of some friend who has a gun that is a "strong shooter." If the purpose to which the gun is to be consecrated is mere blazing away and target practice in general, then the .22 caliber revolver with as long a barrel as possible is the gun indicated. If the gun may be put to more serious use, that of defending life and property in addition to mark shooting, then the tyro cannot go wrong in getting a .38 of any reliable make.

To get the full measure of enjoyment out of such a weapon, secure a set of reloading tools and shoot three times as much for the cost of your usual allowance of factory ammunition. It should be remembered that the .22 handles cheap ammunition, is accurate, has little recoil, less noise, drives its bullets through a smaller extent of country, and is generally preferable for the blazeaway shooter. And it should not be forgotten that in a revolver as in other examples of fine manufactured articles, price means quality always. If you invest $15 in the

THE BEST HOLD FOR ALL ROUND SHOOTING, WORKS WELL WITH ANY GUN PICKED UP. SECOND FINGER IS PRESSED INTO CURVE OF FRAME TO REAR OF TRIGGER GUARD, STEADYING THE GUN, HAND WELL UP TO THE GRIP, TOWARD LINE OF RECOIL.

weapon you will get an equivalent amount of pistol goodness for your money.

Target revolver shooters use the .38 in ninety-five per cent. of the cases, while for indoor shooting, where the target is reduced and a large hole counts more than a small one, the popular gun is the .44 or .45 with a bullet that cuts a clean hole in the paper and gives full value for the shot. When it is noted that the bullseye indoors is but 2.72 inches across, the reason for using the "cannon" will be made clear.

The single shot pistol should not be overlooked in taking into consideration the various types of hand guns. The make commonly used by target shooters costs $15, but there is an excellent arm of cheaper make, weighing about two pounds and retailing for about $7 that gives excellent satisfaction if tinkered a little by a competent gunsmith.

See that the pull of the arm selected is between three and five pounds if a revolver and around three pounds if a single shot pistol. If it falls without the charmed circle, don't tinker it yourself, take it to a good gunsmith. Amateurs fussing with the pull of guns constitute a fruitful cause of accident through the pulls getting easier and finally failing to hold.

The rear sight should be a flat bar with a "U" cut in it, the front sight a bead, preferably of gold. If the arm is a revolver without target sights, the sights will consist of a groove in the frame giving a "U" shaped appearance when looking through it, with a steel blade for a front sight. The rear sight cannot be changed, but a gunsmith can fit a bead to the front sight. A form of sight popular with revolver shooters is a square notch in the rear bar sight with a square, flat-topped blade for the front sight. Properly proportioned, the front blade is drawn into the rear notch with a little light showing on either side of it, while elevation is held by always pulling the front blade down until its top is even with the top of the rear bar sight.

Now with the gun empty and a soft rubber buffer, made out of rubber packing or similar stuff, fitted into the slot in the frame to prevent the hammer striking too hard, you are ready to get acquainted with the innate possibilities—and cussedness—of the revolver.

Forgetting all about what you thought was right or what you've seen somebody do or what somebody told you about pistol shooting, poise yourself with all your muscles at ease, right side toward some fixed point on the wall before you, right foot about twice its length from the left—according to your build and the size of your feet—and pointing a little to the left of a line drawn from you to the mark on the wall, left hand on the

hip, right arm *fully* extended. This does not mean with the crowbar rigidity of the drowning man grasping the straw nor yet that senseless crook often affected by the inexperienced revolver shot. Merely extend the arm at full length as though pointing out some interesting object to a friend.

See that no muscles are strained and that you are at ease as you stand there. Lack of poise—ease—means strain and strain means final wobbling. The pistol will attend to this part without your throwing in any extra frills.

Cushioning on the Breath

Take a deep breath and let it go. A couple of them help to steady you down. Now take a half breath and hold it. This is your shooting position and the shooting position of practically every expert revolver shot in the country. The "southpaws" are, of course, reversed so far as the extended arm is concerned.

You are now ready to snap the empty gun a few times. There are three pretty well defined holds used by the best revolver shots in this country, two of them giving good results and all of them having their advocates. One of them you must adopt and stick to if you seek accuracy and satisfaction.

In the first hold, run your hand up the thin part of the pistol's grip until the curve in the frame just back of the trigger guard rests on the second finger. The trigger is, of course, to be pulled with the index finger. The other fingers are clasped firmly around the grip. The position of the thumb makes the difference between the two most popular holds. In the first the thumb is laid along the "shelf" beside the hammer, touching the latter part. The pistol is fired by the gradual pressure of the thumb downward on this shelf, with a steady squeeze of the trigger finger upward toward the thumb.

The second hold differs merely in that the thumb instead of being laid on the shelf is extended downward along the side of the frame, pointing almost directly at the trigger finger. For all round shooting, where other guns may be picked up and used, this is probably the most satisfactory. At times the user of the first hold is embarrassed by finding the accustomed roost for the thumb missing, due to a different model of pistol. Particularly is this true with the automatic pistols now so commonly used.

The third hold, which is not to be recommended although good work can be done with it, is to run the hand toward the butt or lower end of the pistol's grip until the little finger can be curled *under* the butt instead of around it. This carries the hand so far down the grip that the second finger loses contact with the "pivot point" of the frame and the entire gun seems more wobbly than when held with the hand well up the grip into the curve of the frame.

The chief advantage of the third hold is that the trigger finger gets a direct pull to the rear when pressure is applied and the gun apparently pulls easier. The power is also more easily applied when using the double action or self-cocking mechanism of a revolver when the hand is well down the grip. It is doubtful if these advantages compensate for the drawbacks of this style of hold. Many revolver shooters, in the effort to get this more direct pull at the trigger, insert pieces of hard rubber or wood into the curve of the frame, thus carrying the pivot point farther down and allowing the hand to move likewise toward the butt without losing contact with the support of the frame.

There are two ways to pull the trigger to get good results and half a dozen ways to get bad ones. The way commonest among beginners is to get a firm hold on the gun, point it for an instant in the direction of the mark, give a convulsive jerk at the trigger and flinch into the bargain. Twenty shots will convince anyone who watches the results of this shooting that the revolver is as inaccurate as its libellers state.

The first correct way is to grasp the revolver firmly and then gradually compress the entire hand, squeezing the pistol's grip evenly with all the fingers. The trigger finger, sharing in the movement, finally drags the trigger from its engagement with the hammer and the gun is discharged without its muzzle being deflected by the motion of the hand.

The second way to shoot accurately is to train the trigger finger to move rearward without disturbing the hand and the gun contained therein. This means an intense concentration of the will on that finger to prevent movement of the pistol during the process. You will find the natural tendency when pulling in this way is to make the muzzle duck downward as the trigger is pulled.

The last is probably the best way of the two for the man who intends to make accuracy. The trigger pull once mastered, there remains between you and the experts only the practice which will serve to train the muscles of the arm to hold the pistol reasonably still.

You will find, when aiming the pistol without attempting to press the trigger, that the muzzle has an uncomfortable wobbling motion. Curing this is entirely a muscular training, obtainable through practice alone. In spite of it you can do fair work from the start if

A HOLD MUCH USED BY EXPERT SHOTS. HAND WELL UP THE GRIP, SECOND FINGER PRESSED INTO PIVOT POINT OF FRAME, THUMB ON SHELF BESIDE HAMMER, ASSISTING IN STEADYING THE GUN. THE DISADVANTAGE IS THAT A STRANGE REVOLVER IS SOMETIMES HARD TO SHOOT, DUE TO THE DIFFERENCE IN THE FEELING OF THIS SHELF ON WHICH THE THUMB IS PERCHED.

the experts hunt their holes if practice will do the work, but for the man who likes to shoot merely as an accompaniment to his trips and who cares little about following the target game, the squeeze of the entire hand is to be commended. Nor is it to be understood that the highest accuracy cannot be obtained with this method. One of the two should be adopted and used exclusively.

The entire secret of accurate pistol shooting is in the trigger pull, holding the sights aligned on the mark while the trigger is dragged from its engagement with the hammer without causing the gun to move. The pistol being held by the hand which is also to fire it, any sudden jerk at the trigger is fatal to the slightest that important item of a perfect trigger pull is mastered. Further training is merely a refinement of your groups on the target. It is the difference between learning to keep yourself afloat on the water and later learning the various swimming strokes. The first part is the hard part and the important one.

Practice with the empty gun is of far more value than shooting cartridges. It will be a few days at least before the fall of the hammer will cease to cause the muzzle of the gun to perform various gyrations, and until it has gotten over this you are wasting ammunition if you go to shooting, unless you seek merely to start a small Fourth of July celebration without regard to the strike of the bullets.

A HOLD SOMETIMES USED, HAND WELL DOWN THE GRIP OF THE GUN, LITTLE FINGER UNDER BUTT. ADVANTAGE IS A DIRECT PULL ON THE TRIGGER, PULL APPARENTLY EASIER. DISADVANTAGE IS THAT SECOND FINGER IS BELOW PIVOT POINT, GUN LESS STEADY, HAND FAR BELOW LINE OF RECOIL.

As the gun is held in one hand and its recoil comes against the hand grasping it, uniformity of grip must be maintained. Fix on the hold to suit you, the part of the finger you wish to bear on the trigger, preferably the crease below the first joint, tighten the muscles of your hand so that the gun is held firmly, and then don't depart from that position and amount of muscular force devoted to the grip if you value accuracy.

Then, having progressed to the cartridge stage and being sure that your bullets are going to stop without provoking hard feelings or a coroner's inquest, take out the buffer and load the gun. Fix it in your mind, incidentally, that the pistol is the most dangerous of all firearms due to its small size and its diabolical habit of squirming around so its muzzle points at the anatomy of yourself or some bystander.

About the first thing you will do on firing a cartridge is to "flinch" or "fudge" all over the landscape. This in the beginner is a nervous anticipation of the recoil and the noise and a muscular movement to meet it in a way. A similar feeling comes to the expert when the gun fails to respond to the correct amount of trigger pressure, but this comes from anxiety to get the shot off at the right time, not from fear of the kick or noise.

The cure for the flinching is to have some friend or near-friend with a loud, rude laugh load the gun while you look the other way, inserting a cartridge one time and leaving the gun empty the next, so you cannot tell when you squeeze the trigger whether there will be a report or not. You will finally quit for pure shame at the laughter of the loader.

It is embarrassing to lunge and jerk at a revolver, only to have the gun respond with a faint, innocuous "click." Fire until you are past this stage, without trying for any accuracy, merely breaking yourself of the most fatal habit a shooter of any persuasion can get into.

Later, satisfied that when you pull the trigger you are doing it as prescribed and that the kick and report are not affecting you, put a mark on a handy wall or tree—paper targets are easily procured—load the gun and raise it until the front bead is pulled down in the rear "U" with its top level with the top of the bar or the frame. When the bead just touches the bottom of the mark apply your gradual trigger squeeze.

Try to hold as closely to the bullseye as possible, but don't get disgusted at the motions of the muzzle and try to

snapshoot the bullseye "as it goes by." Muscular training alone will reduce the size of those wild motions of the muzzle, but you must not cease your gradual squeeze of the trigger. Ease it up a trifle as the gun swings too far out, increasing the pressure as your sight gets where it should be again but not trying to fire the gun at any fixed instant. Later you can do this with fair accuracy, but not when you first start shooting.

If the first practice is painstaking and your mind is concentrated on the process, you can become a good pistol shot in a short time. By "good" is meant having enough command over the gun to make shooting it enjoyable.

Lest you become discouraged during the early part of your experience and the blank target tells you a tale about your shooting that you would not have believed without proof, note that a good revolver shot thinks nothing of ten shots inside the eight-inch black at fifty yards, that "possibles" of ten shots inside the 3.3-inch "ten" ring at the same distance are not unknown, that scores with five shots inside this ring and the other five in the 5.54-inch "nine" ring are comparatively common, and that indoors at twenty yards, two men have each put ten shots inside a circle 1.13-inch across.

As further proof, take the writer's own experience in learning to shoot years ago. At ten feet he was unable to score a hit except by accident on a five gallon oil can with the handgun. Now, after years of practice, he is able to hit such a can at such a distance every once in a while.

RUGBY FOOTBALL IN AMERICA

BY WALTER CAMP

Illustrated with Photographs

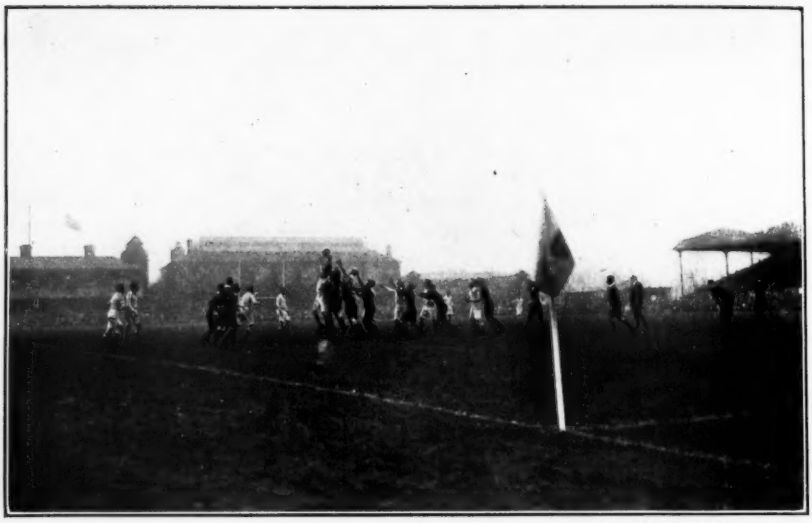
THE only section of the United States where American Intercollegiate football does not hold full sway in the fall is the Pacific Coast. There two of the universities, Stanford and California, gave up the game some three years ago and adopted Rugby in its place. At first Rugby was unsatisfactory to the student body, players, and spectators, but with three years of it they have grown to like it; it is serving its purpose and it is a good game. It lacks the definiteness and planning of the American Intercollegiate, and there is a far greater measure of luck and chance, with more individualism and less team play, but it is fine exercise.

Outside of these two the coast universities are playing the American game, and there is remarkably widespread interest in it. Especially is this true in the Northwest, where some of the best players and teams are located. The great majority of the readers of this magazine are perfectly familiar with the American Intercollegiate game, so that they will perhaps be interested in some more extended views of the Rugby, especially as played by the Americans.

To the average American Intercollegiate football player the word "Rugby" has as little interest as "checkers." It may be a game, if you please, but it is not what he calls football. True, he has had almost no opportunity to know anything about it, to play it, or to see it, but even if he has had it does not appeal to him.

A team of Rugby players were desirous some years ago of visiting New Haven and playing against a Yale team. They were from British universities, the majority from Edinburgh. Arrangements were made for the contest and people were advised that here was an opportunity to see another kind of football which might appeal to them.

It was at a time when there was the greatest turmoil over the American Intercollegiate rules and many who were



Photograph by Paul Thompson, N. Y.

RUGBY PLACES A PREMIUM ON THE "LOOSE BALL" GAME.

not familiar with the conditions of the case were looking eagerly for some kind of a substitute. That is, they were fearful of injuries in the American Intercollegiate and were led to believe that any other game of football was less dangerous. Hence the appeal.

The Yale players knew absolutely nothing of the Rugby rules and the only opportunity to give them any idea of them occurred the day before the game. The principal point of instruction given them was to always get in a kick before they were tackled. Now anyone who has played the American Intercollegiate game must realize how almost impossible it is to make this instruction sink home sufficiently into the inner consciousness of the man to cause him to do anything save to hang to the ball like grim death. This latter, be it understood, is so drilled into the American Intercollegiate player that it has become second nature with him. Needless to say, the American players almost invariably failed to get in their kick and were tackled with the ball still in their possession.

Any Rugby player will fully understand that this meant a loss of perhaps thirty yards or so each time to the Intercollegiate player, for when the ball is put in play in the scrum in Rugby there is no value in possession. In spite of this fact and the constant gaining by the Britishers through placing their kicks so that they fell just outside of bounds on the side line, the American players, owing to their far superior tackling and more determined running, held the contest even so that in the end the game was a tie, neither side scoring. The Rugby men found it impossible to play their passing game with success, because the wing men on the American side would not be drawn in.

It was a very interesting exhibition to the student of the game, but the spectators, after some ten or fifteen minutes' play, lost interest and began to drift away, and there were very few who stayed to the finish. Some of this lack of sustained interest was certainly attributable to the fact that the spectators did not understand the rules. Many when they were leaving expressed themselves as dissatisfied with the lack of definiteness in the play.

Of course, this contest was not a fair illustration of the way the game is played by high class exponents. In the tackling the Americans struck the visitors as extremely violent. One of the British

Photograph by Paul Thompson, N. Y.

IT IS A SPORT THAT CALLS FOR GREAT ENDURANCE.

players said in a joking way after the game: "Why, you chaps were not content to collar us—you sent us to the ground and then drove a stake through us."

But there is now an unusual opportunity to study Rugby football in these two universities, California and Stanford, an opportunity not given in any other country in the world, for here teams may be seen made up of men who have played Rugby football now for some three years and at the same time teams that have been brought up on the American Intercollegiate and are now in their first season of Rugby. Some strange things happen. In the first place, the costume is mixed.

Men who have played Rugby before in the old country or elsewhere seem to take kindly to the short trousers and bare knees. Down at Stanford where there is a splendid turf field this is practically safe, but at Berkeley where the field is not a turf field, but adobe, I noticed, as I had in Canada, some of the men preferred the long trousers, which gave some protection to the knee.

I remember in this connection that when I first went north to see the Canadians play at a time when they had some six or seven different varieties of rules in that country, although the Rugby element had introduced the bare knee, it had more or less given place to an extraordinary maneuver on the part of some of the players. They went on to the field with bare knees and woolen stockings rolled down around the calf of the leg, but just before the play commenced they rolled up their heavy woolen stockings over the knee and some of them put on in addition a leather knee-piece protecting the front of the knee and strapping around behind it.

But to return to Stanford and the University of California. The first year's men did not seem to get as much out of or enjoy the play as much as did those who had been at it a longer period of time, say, two or three years. Men who had played the American Intercollegiate and who had now on account of the forbidding of that sport in the universities been forced to take up Rugby were somewhat divided in their opinions.

Those who had played Rugby for three years, realizing that there had been very material alterations in the code of the American Intercollegiate, were not very anxious to go back and learn a new manual; that is, they would rather now play the Rugby where they knew the rules. In the backfield they did not find very much difference, except that it was

more hit-or-miss in Rugby and harder on the wind. They liked the more definite planning of the American Intercollegiate.

When it came to the line men, however, particularly from tackle to tackle, it was a fact that Rugby had a stronger following. An expert line man in the American game realizes fully that the bulk of the spectators are wholly unable to tell whether he is playing a good game or a poor one, for his work is not of the showy nature. In Rugby this same line man, we will say a guard or a center, may have an opportunity at almost any time to shine with all the luster of a star back; that is, he may get the ball and run with it, kick it, or, as I saw one fine big forward succeed in doing, dribble the ball along past his opponent and then pick it up and score a touchdown. For this reason it does not take very long to convert a big fellow who has never played elsewhere, except in the middle of the line, to Rugby.

Changes Already in Process

The American is inventive and it is hard to hold him with traditions. For this reason the Rugby game as adopted on the Coast some three years ago has already begun to undergo changes, just as did the original Rugby which was adopted in this country in 1876. It is probable that these changes will continue as one point after another comes up that gives trouble. The most dangerous phase of Rugby to-day is the liability of kicking an opponent in the head when one man is dropping on the ball and another is kicking at it. Several injuries of this nature have occurred and the writer saw one or two very close calls.

At the game between the University of California and Stanford this year they had a larger crowd than they have ever had before and they really played better Rugby than they have previously been capable of, but naturally with only the limited time which the game has been played in the two universities it is not quite fair to compare them to high class exponents of the game in England and Australia. I sincerely trust that they will pardon me for taking this view, but they themselves—the best of them—know exactly what is meant and will, I am sure, appreciate it.

Their passing, for instance, is not so deadly nor is it as frequent as it ought to be. Of course, there is something to be said on the fact that these contests between the two rival universities are not unlike the games of American football between the Army and Navy. There at times the feeling and excitement of the players lead them to play more desperate but less skillful and less scientific football than they play at other times.

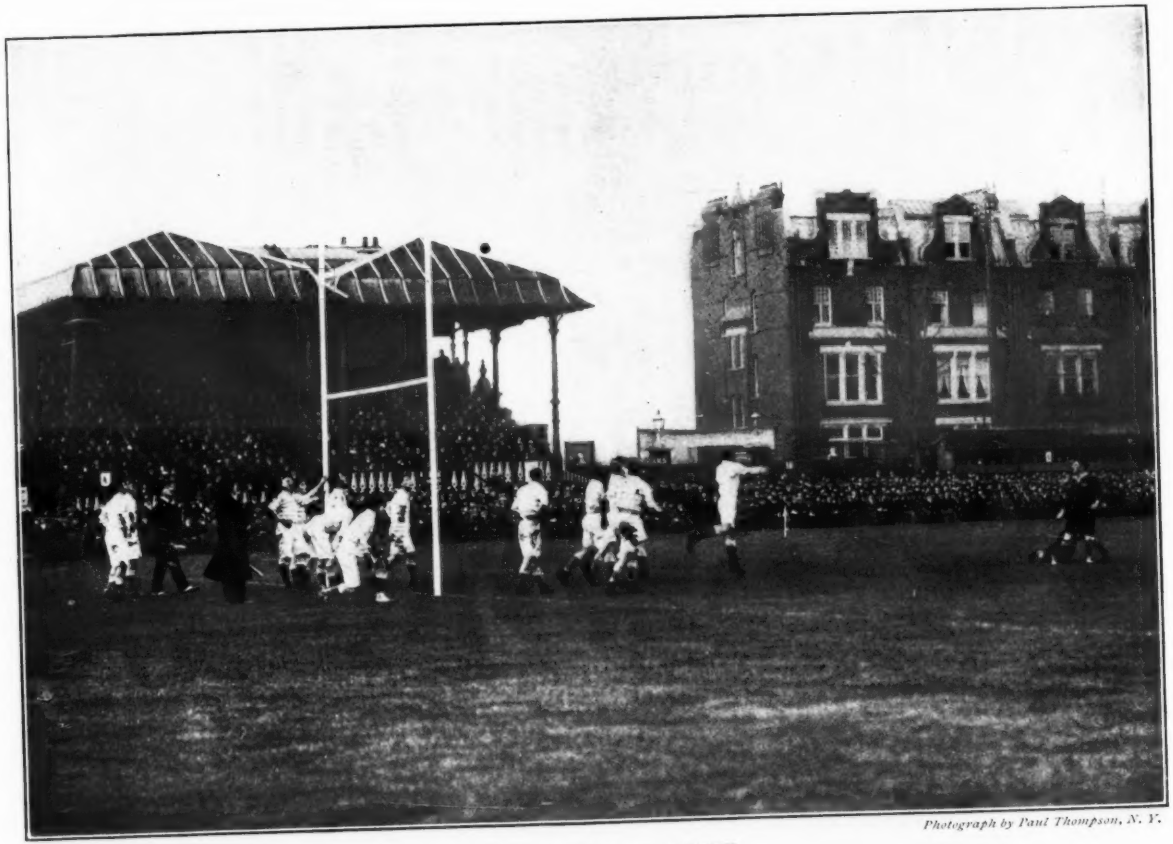
A first class Australian league team or a team from the Northern Union such as journeyed to Australia last summer from England would outpass the Californians in many ways. Of course, in these Northern Union teams lost time is paid for, which although it does not rate the players as regular professionals, detracts from their amateur standing. The Northern Union game, especially in Lancashire and Yorkshire, would be a revelation to many of those who have merely seen the more mediocre play.

The men who form these teams are of excellent physique, strong and powerful, putting up a hard, vigorous game with tackling that is earnest enough to be severe. The business is business far beyond the notion of those who have never seen it and is rendered even more strenuous by the fact that all the games are in competitive league series.

But that Rugby is free from injury all those familiar with the game know is quite an erroneous idea. Note, for example, what the Australian football player has to say of Rugby.

The following extracts are from the Australian rules book issued by the Victorian Football League, Melbourne, Victoria, Australia. In the introduction, after describing the ordinary outdoor sports, it takes up Rugby as follows:

"Far otherwise it is when the hope and pride of the family is football playing, according to the old or Rugby rules. There can be no doubt that the heads of many families prevent their boys playing football because of this feature. At an athletic gathering recently held in Sydney, the head master of one of our leading public schools thus graphically



Photograph by Paul Thompson, N. Y.

SCORING A GOAL IN RUGBY.

described a cartoon he had recently seen in a comic illustrated paper of a Rugby player at the end of a match: 'One of his eyes was hanging down his cheek, his nose was all raw, he had one arm damaged, and one of his legs was in his hand; but, notwithstanding all this, he is represented as saying: "Oh, what a time we had!" ' This is, of course, a humorous exaggeration, but certainly depicts the very general belief as to the risks and probable consequences of playing a game of Rugby.

Rugby Not Child's Play

"It was in consequence of the prevailing belief as to the unnecessary risk of Rugby as played and the opinion that needless exposure to personal injury did not necessarily tend to increase courage, that certain Victorian enthusiasts in football in the early days were led to consider whether the unnecessarily rougher features of the game as played under Rugby could not be eliminated."

In commenting upon the special features they continue: "Our game has no scrum or scrimmages. Possibly this is one of the greatest points of difference between the Australian game and Rugby. Many of the physical accidents on the football field are due to the scrum, which also tends to give victory to weight and brute force, instead of skill and activity. The consequence is that in Rugby the heaviest team almost of necessity must win. Weight of team can always be purchased, but science in playing can only be acquired by application.

"Another serious objection to the scrum is that during its progress it is practically impossible for the umpire to see all that is going on. The consequence is that many irregularities take place unchecked during the game. The record of serious accident to limb and even life itself, due to the scrum, is certainly nothing short of appalling."

But in the rules of the Australian game itself there seem to be suggestions that all is not simple and that some difficulties may be experienced even with the gentle Australian game, which the confirmed Britisher calls "tiggy-tiggy-touchwood."

"Tripping, hacking, rabbiting, slinging, are prohibited." "A player disputing the decision of an umpire, or unduly interfering with or assaulting, or using abusive, threatening, or insulting language toward him during the progress of the game, within or without the enclosure on the day of the match, shall be dealt with as the League may think best. A player assaulting another player shall be reported by the umpire. Should the field umpire appointed for a match, before or during the progress of a game, become incapable through sickness or accident to perform his duties, a substitute shall be appointed by mutual arrangement between the captains.

"Any team detected during the progress of the game playing more than the number arranged for shall have all the points kicked prior to the detection of the same annulled. The field umpire shall have power, at the request of either captain, to stop the game and call the players into line at any time for the purpose of counting them."

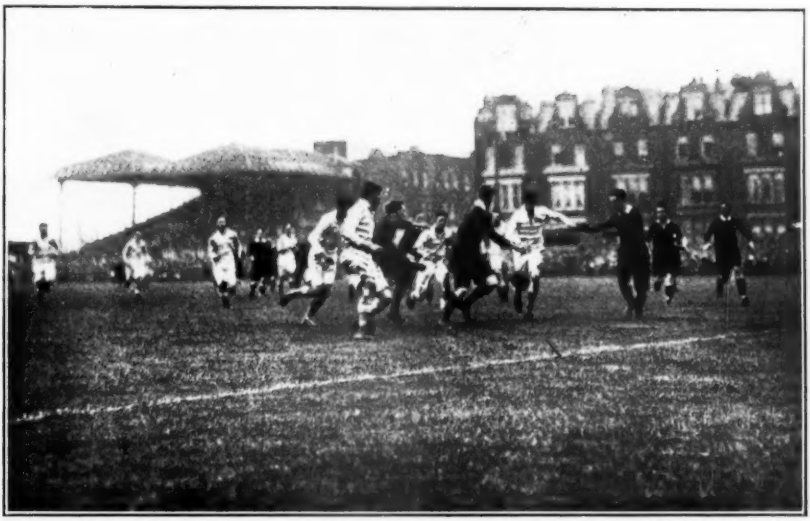
And they have had trouble with the officials even in the British game. In a copy of *Pastime* an editorial called "The End of the Umpire" began with the sentence: "Dr. Johnson defines an umpire as one who, as a common friend, decides disputes." In quoting another official it says: "An umpire is of little use nowadays unless he can 'rush' the other side." Further, it goes on to state that one Mr. Marshall, an official to the club, was complained of by three of the players as "not sufficiently mindful of their interests." The committee, we are told, saw the force of this extraordinary protest and intimated to their umpire that they would like to engage another gentleman "for a change."

Continuing, *Pastime* says that "the reference in Rugby has, like the coxswain of a college boat, a thankless position. If his decisions be uniformly right (an impossible supposition) they will, none the less, give dissatisfaction to some fallible observer; if they are wrong, they are almost equally sure to incur blame which will be the more painful because merited. In either case he is suspected of dishonest partisanship or driveling incompetence."

Further on in the article, *Pastime* speaks of the official's keeping up appearances by addressing a preliminary caution to the assembled players, "setting forth with Pecksniffian eloquence the moral beauty of fair play and the dangers of lawless violence, but after this virtuous display nothing comes of his threat. The players may trip and push and jump on the legs of their antagonists. Such reticence insures to the official peace, pence and prosperity; whereas, just severity would mean brick-bats *in praesentis* and loss of future occupation."

But such troubles with officials may be found in all games—not necessarily partisanship, but poor rulings and lack of keenness so that this charge may not be especially laid to Rugby. There is one feature that must inevitably give trouble to beginners, however, and that is the rolling the ball in in the "scrum," for here a great advantage may accrue to a side if the official is careless or unfair. In fact, a ball may be rolled in in such a manner as to make it possible for one side always to get it out to their backs. Supposedly, however, the ball is always so put in as to give each side an equal chance.

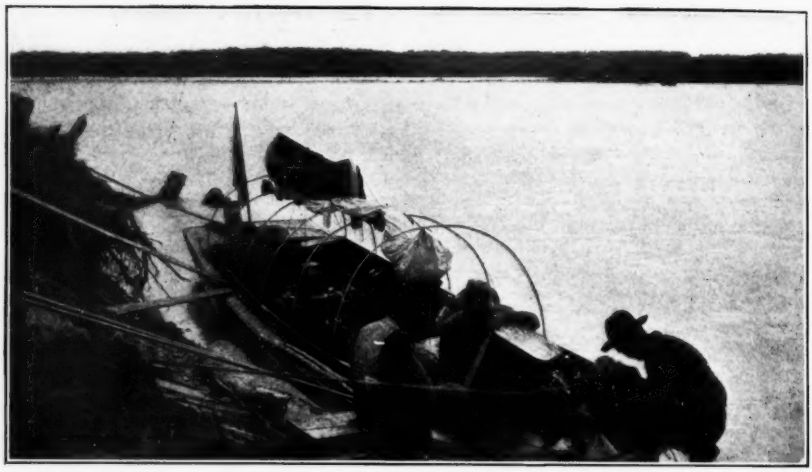
The game is a great game just as it is now being played on the Pacific Coast by the two universities. It is a vigorous game, calls for great endurance and speed and offers excellent opportunity for the development of skill in passing, dribbling, and the placing of kicks. No man may play it and not expect the hard knocks that go with football. The action is more continuous and has less pauses in it, barring, of course, the inevitable constant kicking into touch.



Photograph by Paul Thompson, N. Y.

OXFORD STOPPING A RUSH IN A GAME WITH CAMBRIDGE.

The defensive play is as yet not developed to the extent of the attack, but that is coming along. Coaches are at a premium in Rugby as in Intercollegiate, and while the planning out of plays is not as yet nearly as great, the New Zealanders have shown the possibilities of such work and the South African teams, as well. On the whole any student of football would not be making a mistake to journey to the Coast and watch the development of the play there, for it is far more enlightening as far as the possibilities of Rugby in America are concerned than to see British players on their own soil, for we play everything differently and the game must be studied while in its formative period.



Photograph by H. C. Parker.

OUR ANCHORAGE AT TALKEETNA. GIVES AN IDEA OF THE IMMENSE AMOUNT OF WATER THAT COMES FROM THE MOUNTAINS OF THE INTERIOR.

BY MOTOR BOAT TO MT. McKINLEY

BY BELMORE BROWNE

Illustrated with Photographs

THE loss of our whole pack train of twenty-one horses in the 1906 Mt. McKinley campaign proved that the pack-horse method of reaching Mt. McKinley was impracticable. The only hope left to us was the possibility of ascending the great water system of the Susitna River and reaching the southern foothills of Mt. McKinley in a motor boat.

Of all the problems in our northern motor-boating, the choosing of an engine proved to be the most serious. In 1906 we used a very light and complicated gasoline auto marine engine, and on our first river trip we could see that the engine could not stand the rough usage and unusual conditions of glacier river work. If you take a cupful of glacier water and let it stand until it has settled, you will find that one-fifth of the fluid is composed of the finest kind of pulverized silt.

This silt is the natural tailings of nature's stamp mill and is composed of crushed rock, quartz, etc. In the water cooling systems used in gasoline engines, this silt clogs the cylinder water jackets, and as your engine heats you have a very perfect but undesirable imitation of a brick kiln on your hands. In a heavy storm in 1906, our engine became red hot and stopped. We were about half a mile from the surf on a lee shore and the surf was breaking mountain high about a mile from the beach. When we finally got the engine running again, we were within two hundred yards of the breaking surf, and two green seas had rolled completely over our frail canvas cabin. Since then, I have taken a fren-

Photograph by Belmore Browne.

OVERHAULING BEFORE "HITTING" A RAPID IN THE BEGINNING OF THE CHULITNA CANYON. A CANVAS BOAT-COVER IS A NECESSITY IN THE RAINY SECTIONS OF ALASKA.

zied interest in the different water cooling systems.

The continuous rains and damp weather of the Alaskan range likewise affected our electric batteries. Another difficulty that we encountered was the lack of gasoline in the Cook's Inlet ports, and as the steamers that carry gasoline run only at long intervals, the fuel question is a constant annoyance. With all these harrowing details in view, we turned our eyes in 1910 toward kerosene engines, and finally selected an 18 h. p. two cylinder engine that developed 26 h. p. when tested.

Our party consisted of eight men and our outfit was complete down to the smallest detail, and included a separate outfit for two months' travel on the glaciers. Knowing from previous experiences the temper of the Alaskan rivers, I secured a complete set of such engine parts as could be installed in the wilderness, including four propellers and an extra steel shaft, and we found good use for them before we saw salt water again.

Our first struggle with the wilderness occurred at Beluga (Aleute for white whale). We reached Beluga before the winter ice had left the rivers, and we ran our launch, the *Explorer,* named after the Explorers' Club of New York, into an eddy protected by a log boom at tide water. A few nights later, the "fire works" began. I was sleeping aboard the *Explorer* when I heard Finch, who was manager for the A. C. Co. at Beluga, calling to me that the ice was coming down the river. We all turned out at once and, armed with pike-poles, manned the boom to repel the ice floes.

It was an exciting time. Sometimes the pressure of the ice would grow so strong that we expected to see the boom crushed and our launch and Finch's flat boat ground to bits, and then, one by one, we would pry the ice cakes loose, and down stream they would go, grinding and groaning against each other in the swift current. After standing by for two nights during the ebbtide and fighting off the ice, we were confident that the Susitna had also broken her winter bonds, and starting the *Explorer's* engines we began our journey.

The Susitna River enters Cook's Inlet through a large delta of marshes and mud flats. The water is extremely shallow, and the river is broken into many channels. The channels are very broad and the low shores make it extremely

Photograph by Belmore Browne.

A SUSITNA INDIAN IN A SUSITNA BIRCH-BARK CANOE, FOUND ON ONLY A FEW OF THE ALASKAN RIVERS.

difficult for a stranger to follow the right course. When we entered the river we encountered large floes of ice through which we gingerly pushed our way.

Following in the wake of the *Alice,* an A. C. Co. river boat, we had no trouble with the perplexing channels of the delta, and shortly afterwards we began to stem the strong water of the main river. While the first thirty-five miles of navigation on the Susitna are extremely easy—as navigation on northern rivers goes—there are many ways of getting into difficulties unless you are familiar with this sort of work. The water, besides being very swift in the narrow channels, was covered with floating ice, and if you have never been impressed with the solidity of frozen water, you will be when you hit what appears to be a small floe with the concussion of a head-on railroad collision.

During the first stages of our journey, we were consumed with anxiety about the working of our engine. It was the first opportunity that we had had to try it out in swift water, and while it was not running in an entirely satisfactory manner, we would occasionally make bursts of speed that filled our hearts with joy and presaged the successful conquest of the unknown rapids of the interior.

Now, the navigation of swift rivers is fairly safe as long as you take pains and do not hurry. In bad water all men will, of course, use caution and do their utmost to keep away from danger, but in ordinary water this is not the case. Time is of value, and a good river-man by using his knowledge of currents and eddies, and by the skilful handling of his boat, will cover many more miles in a day than an over cautious man who continually holds to the deep current.

Probably the most exciting part of river navigation is ascending the swift, shallow rapids. The valley of an Alaskan river the size of the Chulitna is usually several miles broad and as flat as a table. Through this level waste of gravel the river forces its way in countless channels that are liable to change from day to day, and the steersman must be skilful who unerringly chooses the right course.

You may be speeding up a fine stretch of river, in a broad channel, when the river splits. One branch may follow a dense fringe of timber that marks the edge of the valley, while the other may

join it from the broad valley, where you know that there are hundreds of branches crisscrossing back and forth. If the streams are of equal size, you must put all your experience to work in choosing the right course. The masses of snags and driftwood that rise above the level of the valley can be seen a long way off, and they usually indicate the location of the largest channels. "Cut" or straight banks usually indicate deep water, and the points of forest land that run far out on the gravel bars will give you an indication of the direction of the main channels.

The best looking channels, however, are often "blind" at either the upper or lower end; for instance, many small streams may overflow from a main channel and join each other one by one until, a mile below, they form a channel that appears to be as large and navigable as the true channel.

Photograph by Belmore Browne.

THE *EXPLORER* UNDER FULL SPEED. SHOWING THE TWO "SOUNDERS" ON EACH SIDE OF THE STEERSMAN.

A man coming up stream may easily choose the "blind" channel, and being unable to see far ahead on account of the flatness of the valley, he will continue until the water grows so shallow that he is forced to retreat. As he has not room enough to turn his boat around, he has to drift slowly backward, and when he reaches the main channel again an hour has been wasted. Sometimes we found places where the river was divided into three or four branches of equal size and we would patiently try them in turn, only to find that they all seemed hopeless.

The first step in a case of this kind is to find the channel with the shortest shoal. Two of the crew should then stand beside you, one to port and one to starboard and take constant soundings with slender poles. The rest of the party should move forward to counteract the sag of the boat's stern when she runs into exceptionally shallow water.

I remember one miserable spot of this kind above the canyon on the Chulitna. I couldn't get deep soundings anywhere, and was forced finally to choose the best looking channel and ring "full speed ahead." As the water began to shoal, I called the men forward, until finally I had Cuntz sitting on the bow like a figurehead with his legs dangling alongside the cutwater. La Voy and Grassi were taking soundings, and for what seemed to me an hour they kept calling "Two feet!" "Two feet!" To relieve

the monotony they would occasionally call "two feet—who'll make it three?" And then, sadly, as the shallow continued, "two feet—no takers!"

On this occasion our propeller was touching bottom for long periods, and there is no sound more harrowing than the grating of a grounding propeller. It comes up through your feet from the quivering hull and rings a danger signal in your brain far louder than the roar of the exhaust, the cries of the sounders, or the snarl of the rapids.

Glacier water is a milky looking fluid that hides every inequality of the bottom, and you must glue your eyes to the water for every little sign denoting a deep channel. These signs consist of minute differences in the formation of the surface waves, and they can only be learned by experience. When you see the surface "boiling," you know that you have at least three feet, and as the boils increase in size you know that the water is deepening.

Reading the River

When you see rough water sliding into large, oily eddies you know that the water is running over a shoal into a deep channel. The signs are many and the differences are often so minute as to make a description misleading. The best training for river work is "tracking," as then you are forced to wade, and when a bath in ice water is the result of every mistake a man is inclined to study the current with fervid interest. Eventually you will be able to approximate closely the condition of the bottom by the "look of the water."

Canyon navigation, provided your boat has plenty of speed, is not dangerous as a rule, as the water is usually of great depth. The terrific strength of the current, however, necessitates careful steering. When we ascended the canyon of the Chulitna there were times when we scarcely held our own in the rushing current, and as we took the big swells in the rapids, between the straight walls, the waves roared across our forward deck.

In this sort of navigation I have noticed a queer phenomenon. You may be just holding your own, while the whole boat quivers from the vibrations of the engine and the fury of the waters, and then, when you have begun to give up hope and are casting rapid glances to right or left for a possible eddy to help you, your boat will begin to climb, slowly at first, but steadily and surely.

The rapids may still be bellowing with their former violence, drowning the roar of the engine's exhaust, and the savage swells may still buffet your craft about, but it seems as if the rapids had lost their strength, and on you go steadily climbing the liquid stairway. It almost seems as if the boat was thinking and waiting, and finally when the waters begin to get discouraged, the boat calls out, "Come on, engine!" and away we go—splitting the big swells, sliding over the oily eddies, into the steady current above. These struggles with the white water between canyon walls are the pleasantest part of northern motor boating, and the memory of the breathless moments when you hung, poised in the suck of the boiling rapids, will remain with you for years.

There is another side of river navigation that embodies all the excitement and responsibility without the dramatic setting of the canyon work. On all the northern rivers you will encounter long straight chutes of the river that plow through cut banks covered with heavy timber.

The current in these places is of almost irresistible force and the only way of making appreciable headway is by hugging the banks. As all the soil in the bottom lands is composed of glacial silt, these banks are continually caving in, and as the banks break away the forest trees come thundering down, throwing up great spouts of spray as they strike the rushing water.

Sometimes the trees are held by their roots and overhang the water, making barriers that are of the utmost danger to small boat navigation. These overhanging trees are known and feared throughout the north as "sweepers" and many a prospector, floating to civilization on his spruce raft, has lost his life by being swept under the "sweepers" by the rushing current. In 1906, I hit a tangle of sweepers that overhung a swift

turn below a rapid. We were making a good fifteen miles an hour, and when the shock came, the iron stanchions forward were bent into knots and one of the men aft was nearly swept into the river. In 1910, as we were leaving Talkeetna, a large cottonwood fell as the banks caved in, and just missed our stern.

But even more dangerous are the sunken snags that, luckily, can be traced by the whirlpools and waves that mark their hiding places. Navigating swift main current may mean disaster. He must depend on his crew for intelligence concerning the progress of the boat, and to stand with your eyes glued on the current while your companions cry "She's holding her own! She's holding her own! She's going back an inch! Now, she's going ahead!" is enough to make your hair gray.

We passed a point on our last trip to Mt. McKinley where the water shot between two points with terrific speed.

Photograph by H. C. Parker.

ALONGSIDE OF THE TIMBERED BANKS WHERE THE "SWEEPERS" ARE FOUND. THE LARGE CHANNEL IN THE BACKGROUND WAS "BLIND" AND WE CLIMBED A RAPID ON A SMALL CHANNEL TO THE RIGHT OF THE BOAT.

water among these snags and sweepers requires the greatest mental concentration, and your course is a constant series of mental problems in distances, pressures and speeds.

You may be barely holding your own in the racing stream with a half submerged snag bellowing six feet behind your propeller, a sweeper hanging over you whose lower branches had to be chopped off to make a passage way for the boat, and a log jam ahead around whose jagged edges the current is torn to foam. At these times the steersman cannot take his eyes, even for a fraction of a second, from the current ahead, as the failure to "meet" an over-boil of the I tried twice by dropping back and hitting the current full speed to climb the swift water. On my second failure, I saw that the water above some big snags had overflowed among a grove of small cottonwoods, and on the third attempt I drove her through the cottonwoods on the edge of the swiftest water. Our propeller was beating an insane tattoo on the saplings and left a trail of match wood behind, but we got through.

In another swift rapid our progress was arrested by a large spruce "sweeper." Just above the sweeper was an eddy that was the key to the successful navigation of the rapid. By forcing our boat to full speed we could just stem the current

Photograph by H. C. Parker.

MEASURING THE RISE AND FALL OF THE WATER. IN THE DISTANCE THE FOOTHILLS OF THE ALASKAN RANGE CAN BE SEEN. THIS PICTURE ALSO SHOWS THE SEPARATE CHANNELS AND LOW, FLAT ISLANDS.

long enough for La Voy to throw a bight of a line around the tree trunk. With our engine still going to take some of the pressure from the straining rope, we hung to our precarious anchorage while La Voy chopped through our evergreen obstruction. When the tree fell, it was sucked from sight instantly by the rushing water and we had a clear roadway to our coveted eddy.

As the reader will understand, this kind of work is a great strain on the best of boats or engines, and where chances such as these must be taken, accidents are sure to result. It was for this reason that we took so many extra engine parts and propellers, and we had occasion to use them on our first day in the Chulitna.

Usually an accident on a northern river happens like a thunderclap in a clear sky, and almost invariably the cause of the trouble is some minor accident that, taken by itself, *under ordinary conditions,* would be of no consequence. In the delta of the Chulitna, the river is cut into so many small channels that the water is extremely swift and shallow. We were trying to force our way up one of these narrow chutes where there was no room for maneuvering.

At last I sent four men ashore with a tracking line and with the extra pull that they exerted we began to make headway. Everything was going finely when the tiller line broke. In an instant, the trackers were pulled off their feet and the current drove us over a submerged bar and crushed us against the bank. Making the boat fast, we gave her a thorough examination and found that the propeller was broken, the tunnel badly scarred, and the shaft worn. Nothing but a complete overhauling would fit us for the fight with the Chulitna canyon.

Our first duty was to haul the stern out of water, and as the *Explorer* was lying with her bow up stream, we had to turn her around. As the current was exceedingly swift, we were afraid to let the current take her bow around, so we made a line fast to the bits with the idea of easing her. After anchoring the stern firmly, we cast off the bow, but a battleship's hawser would not have held against that current, and when we finally succeeded in pointing her stern upstream, we had broken a manila line, torn the bits out by the roots, and nearly killed a man who got tangled in the hawser.

Before turning her we had to unload

all our duffel—a good sized job in itself. Then, after hauling the *Explorer's* stern out of water with the help of a "dead-man" sunken in the frozen gravel and a block and tackle, we recorked the tunnel and sheathed it with tin from kerosene cans. We then put in a new steel shaft and propeller, melting our babbit in a frying pan. Twelve hours later, with a new tiller line insuring the strength of our steering gear, we were flying up the Chulitna with everything in better working order than before the accident.

On another occasion we were prospecting a bad rapid for a route, when Jack Thompson shut off the engine and yelled "Throw out an anchor!" We were about fifty yards above bad water, so we dropped two anchors which we always carried on the forward deck ready for instant use. The current was so strong, however, that we dragged our anchors and came up with a thud on a bar at the head of the rapid.

In a case of this kind it's "every man overboard" and into the water we went. The water under her bow, where we had to work to push her off, was about three and one-half feet deep and so swift that we could scarcely stand against it without holding on to the *Explorer.* When we began to push we had to lower our shoulders and the rushing glacier water would run down our necks.

Working over a boat under these conditions is about as unpleasant a task as I know of, and when the day is cold and raw, with downpours of cold rain drenching your back, the loud roar of the rapids is not loud enough to drown the explosions of "language" from the workers. When we finally got the *Explorer* into deep water, we found that in some mysterious fashion the tail shaft had become unscrewed and would have slipped out into the river had not Arthur Aten caught it with his bare hands. He was a truthful man who said that "It is the unexpected that always happens."

Going up a glacier river is very much like mountain climbing in one particular —whenever you strike a bad place you think of the return trip. By far the worst side of river navigation is the descent. When you hit a shoal going up-stream, the current will help you to get off, but when you hit a bar coming down stream, the current jams you on.

As the current usually runs like a mill race in the shallows, you can rarely work your way up-stream into deep water. If you have deep water on either side of the boat, you can sometimes work her sideways, but if the shoal is not too long below you, you will save time by working your craft slowly down stream. The method we followed in accomplishing this rather elaborate feat was "sluicing."

After striking a shoal, we would send out men with poles to test the shoal and locate the deepest near-by channel, if one existed. Having located the route we wished to take, we would begin operations. First, pushing the boat parallel with the current, we would turn the up-stream end about six feet to one side. The current, being deflected, would wash the sand and gravel away from the exposed side of the boat to a depth of about three feet.

After the channel was sufficiently deep, we would push the up-stream end in the opposite direction until a new channel was sluiced out. After each of these laborious sluicing periods, we would make a foot or two of progress. Sometimes it was necessary to shovel away the gravel bars that formed below us, but as a rule the water would sluice them away while we worked.

Light Boat the Thing

In this work we were forced to spend hours in the ice water, and this form of exercise will indelibly impress the fact on your mind that a boat for use on northern rivers should be light enough to move by hand. In the fall of the year, the water in all the Alaskan rivers drops very quickly, and it might easily happen that a heavy boat, once stranded, would be forced to remain in her uncomfortable berth until the coming of the spring freshets. I have known of boats being held for days in this manner.

You should always *back down* dangerous parts of the river. To keep your steerageway, running with the current in a rapid, you would have to run

your engine at full speed, which, with the help of the current, would give you a speed of about twenty miles an hour. At this rate of progress, you would not only be unable to see the dangers ahead, such as submerged boulders, but you could not make even a moderately quick change in your course. The backward method of descending rapids is the only safe way in any boat with the exception of a light canoe.

But with all its trials the life on the northern rivers has a fascination that is hard to resist. You can never forget the long, peaceful days when the channel was broad and deep and you could look away to distant, unnamed snow peaks, gleaming through the spring haze. The very songs your comrades sung come back to you above the patient thundering of the engine. But the most peaceful memories are of the still spring evenings, when the river turned to a sea of crimson and the cool sweet smell of the spruce and cotton woods came to you across the water as you slowed the engines, looking for a place to camp for the night.

SOCIAL SIDE OF COUNTRY LIFE

BY E. P. POWELL

COUNTRY people used to get very close together when they lived a mile apart and the woods came up everywhere in the sight of the road. The forest held two-thirds of the land in those days, and we built our houses along the edges. We fought wild animals in company, and we joined forces for planting and harvesting; husking corn together was not only a matter of economics but of social pleasure. In those days nearly all traffic was the swapping of homemade goods, homemade food, and homemade clothing; eggs went to the store for sugar, and in one way and another we managed to make every little community complete in itself.

We were pioneering across the continent, apparently with no other than individual intent, but somehow groups came about and each one had its district school by the roadside, its store on one of the corners, and its log church, with a grist mill every fifty miles. Each family brought something out of its Connecticut or Massachusetts home that it divided with its neighbors. One had a few currant bushes; another some apple seeds, while a third had grass pinks and hollyhocks. There was at least one horse and one yoke of oxen to begin with, and they all worked together for common welfare.

This was what the Pilgrims had done, and they had not hesitated to call their homes a Commonwealth. The fields were tilled largely by mutual aid; tools were used in common, and crops largely held in common. Have you ever considered the meaning of the word neighborhood? These were all neighborhoods, closely bound by common needs and coöperation, building each other's houses, and doing all sorts of things without hire. It was a meaner life that, by and by, changed all this good will into hard cash. Mothers could call on neighbors' daughters for a week's service, at any pinch, no one felt above doing housework, and no boy was above field work.

On Sunday the people gathered in one union church, on the "commons," and the good of the service was quite as largely social as it was religious. The people swapped news as freely as they listened to long prayers, while friendly gossip about neighborhood matters was very justly considered of as much importance as information about the golden paved city of a future life. The day of sects and divided worship had not come in; all people were truly brothers and

sisters and neighbors in the sense of the parables of Jesus.

Individuality worked itself out by one making brooms, another shoes, and another weaving the homespun rolls of the neighborhood. Yet all tilled the soil, raised their own vegetables and meat, and in every house candles were dipped, soap was boiled, carpets were sewed, quilts quilted, and the wool of the farmyard was spun into yarn which went into home made stockings or otherwise contributed to the clothing of both sexes.

It was a cozy life that worried very little about transportation and none at all about railroad rates or coal bills. The parson glorified God and served the community for what he could get, and there were no millionaires. In this way the United States was being made out of commonwealths, with a widening commonweal. The larger cities did not number one hundred thousand inhabitants, and the villages were merely nuclei of the farms.

The revolution that began about 1850 affected our social relations quite as much as our physical conditions. The sickle had already disappeared, and now the scythe was destined to follow. Instead of a line of farmers racing across the meadows, full of the glee of rivalry, McCormick's reaper marched through the grass or the grain, with one man to drive the horses. Indoors the hum of the spinning-wheel had already been hushed, and now the quilting bee and the knitting matches made way for machinery. The sewing machine abolished sewing societies.

The multiplication of newspapers and the rise of the modern magazine were at the cost of the gossiping crowds who had been accustomed to gather news at the village tavern or the corner grocery and distribute it freely among the homes. More was heard of city life, and a longing was awakened for participation in civic advantages.

Churches naturally suffered, for the country folk preferred to lie on their backs with newspaper or magazine, or to read the Bible or Uncle Tom, instead of walking two or three miles to a preaching service. Not so many cared to hear the opinion of the parson, especially as much of the literature that was now floating into their homes contradicted it. Many of the country churches were closed by 1860. The flux of the people grew strong toward town life, where social cravings could be more easily satisfied. Before the end of the century Sunday lost its supreme control over the scattered country folk. The Hayseed era followed, and it was a sore day for the farmer. Country life was losing its zest and its unity.

The farmer who formerly swapped his veal, his vegetables, and his honey, had begun to ship his cotton and his apples into regions that he himself could never visit. He must learn to trust a race of middlemen who linked him to the remote markets. He had to think of Canton and Singapore as something more than missionary stations. Everywhere coöperation became more difficult, while good will and sympathy became more necessary. It is very strange if, when shaking hands with customers half way round the globe, we shall not after awhile learn a closer friendship and coöperation with our neighbors. This was what was bound to come about.

Coming of the Grange

Under the impulse of this new social demand there grew the Grange, spreading over every State and multiplying its groups of associates. Those who had heretofore discussed cattle and soil and tools and crops began to reach out after world problems It was a blind progress that was made, but the progress was inevitable and sure.

About 1890 the agricultural colleges had begun to bring country work into alliance with science. All the accumulating knowledge of the world was about to be laid down at the door of the farmer. With the experiment stations bulletins were issued, to be distributed freely, bringing to the front those economic questions which can only be settled by coöperation. New fruits and new flowers began to enrich rural life, and men like Burbank stood in the place of those heroes who had previously occupied public attention.

Farm produce not only reached the seaboard cities, but began to get through the tariff cordon and reach the markets of the world. President McKinley invented the phrase "open door," which meant free access for Kansas corn and Minnesota wheat into the ports of Korea and South Africa. District schools began to drop into town schools, and it was clear that we were in an off-clearing that looked to still more revolutionary changes.

When President Butterfield of the Massachusetts Agricultural College held a conference on rural affairs in 1908, he invited not only neighboring colleges but church associations, art associations, and all sorts of labor leagues. He argued that the time had come when the country people must get together, pooling their interests and doing their thinking and their working in common. We must all get our culture from the corn lot, he said. There are languages more ancient than those taught in our colleges —the languages that are spoken and sung and whistled in our fields and woods.

President Roosevelt appointed a Commission on Rural Improvement. The time has come, he argued, to abolish isolation and create again an effective community life. He outlined what he proposed for the improvement of country schools, completing the tendency toward unification, that would give to country children as good advantages as if they lived in town. He would see country roads made as serviceable as macadamized driveways.

He hoped to see the country church re-established as a vivifying force. More libraries and farmers' institutes with wiser lecturers might well be hoped for. Coöperative buying and marketing among farmers he especially desired, which should free them from the impositions of middlemen and transportation interests. Mutual insurance companies, community dairying, and other industrial enterprises in common met his approval. A parcels post and a postal savings bank seemed essential elements to the new country life.

The Commission reported (and the report should be studied in our common schools, and read in all our families) that the improvement of farm life should be pressed forward from both the sanitary side and the esthetic side, making farm homes attractive as well as economical. They would have the telephone in every house, binding together the community, without depending upon occasional trips to the tavern, while rural free mail delivery gave a daily zest to the isolated home. The Commission held that the city had had its full share of attention and that now the country fairly requires the interest of government. The concentering social forces should become distributed. The appointment of this Commission, which seemed to the independent farmer impertinent, was welcomed finally, as giving strong propulsion to a new suburbanism and a broader country life.

Almost immediately a new phase, and a most important one for country life, appeared in an alliance of trade and transit with the farmer. J. J. Hill first announced the doctrine that railroads and the farms were not in opposition, but justly considered the closest allies. President Brown of the New York Central suggested a syndicate, with sufficient capital to buy up the sixteen thousand square miles of deserted farms in New York and New England, put it in shape for use, and then resell at cost. I would provide, he said, capital for the purchasers until their first crops are in hand. In this way the capitalist is striking hands with the laboring man to put him in shape for a country home.

More Fellowship for the Farmer

This sort of coöperation, begun by corn trains, has widened into a very strong fellowship between agriculture and commerce. This is eminently wise, for the real policy of the industries is to work together. The carrying trade cannot overtax the producer without injuring itself. All peoples and all classes thrive together, or they suffer together, and it is fortunate that the leaders of our industrial system are finding this out.

Mr. B. F. Yoakum, Chairman of the Frisco System, said in a recent address before the Farmers' Educational and

Coöperative Union, "The farmers and the railroads have something to coöperate with and something to coöperate for. The heavy reductions in freight rates of the last few years have been absorbed by middlemen, and not shared by either the producers or the consumers."

Agricultural education which had been confined to the colleges and their bulletins was now widened by a plan of educational trains, carrying the best trained workers across the country from town to town, giving demonstrations of how to handle milk and farm crops, how best to manage the soil, in what way fertilizers were needed, and how to combat insect pests while accepting bird alliance. The first of these trains was, I think, in Illinois, but the seventh or eighth crossed the Central lines before the end of 1910.

Naturally this new era of good will led on from farm trains to railroad farms. These are already established by several of the leading railroads, with the avowed purpose of securing the drainage of swamp lands, better plowing, with implements that will bring up the subsoil, the selection of seed of the best varieties, intensive tillage during the growing of the crops, the securing of a large amount of humus in the soil, preventing barnyard, and other waste, establishing the value of crop rotation, with winter cover crops in the North and summer cover crops in the South, the retention of only the best animal stock, the production of food for men and animals on the farm itself, and finally the keeping of careful accounts as well as accurate memoranda of tests and their results.

Following this work of the railroads the States have begun the solution of farm problems through collective action. Governor Hadley of Missouri is at the head of a well-thought-out plan whereby that State will undertake the movement of the congested crowd out onto farms, owned by the State and turned over to actual settlers at cost price. The proposition is to assist the neophytes until tillage has become remunerative.

Heretofore State action has been confined almost altogether to the patronage of State fairs. These collections of the people and their products were at one time of considerable value. They are of less importance at the present day, because we do not need so much the exhibition of horse speed and immense vegetables as we do the demonstration of soil problems and the best way of making timothy grass give us four tons to the acre. The State is needed at present to secure sanitation and industrial education, and to carry the land tiller safely through crises.

The plan, as it will be prosecuted by Governor Hadley, is based on a general fact that most of those who are anxious to leave city congestion are moneyless as well as homeless. It is very fortunate that this is so, for all betterment schemes begin with those who are well-to-do. The wealthy have been on the move for many years and have bought up large tracts of land, including not a few of the very richest farms, and are doing with them nothing at all in the way of adding to the production of the country. They create beautiful landscapes and elaborate houses, but that is all. Just now we are greatly in need of increasing the food products of the United States, and the poorer classes will do this, while adding to their own comforts and creating homes.

The Central Farm Idea

Governor Hadley has already brought about a National Farm Homes Association, and this has reached over his own State to take in the whole Southwest, and to some extent the whole South. Land is purchased, as it can be in large sections, especially in Arkansas and Texas and Florida and Georgia, at ten dollars an acre, or even less. It is then divided into forty-acre farms, thirty-two of these being clustered about a central farm of one hundred and sixty acres.

This central farm becomes the residence of a skilled agriculturist, such as are being turned out by our agricultural colleges. He will have general supervision of his neighbors, to bring about the most economical and thorough methods of handling soil and crops, coincident with profit. In other words, it is a combination of school and work, very similar to what has been projected for our common schools themselves.

This teacher or head of the system will attend to the marketing of products and will lead the way steadily to independence, on a basis of good judgment.

The arrangement of the farms is such as to bring about a mutual exchange of social courtesies and mutual helpfulness, with games in common as well as work. There is the germ here of a new style of country life which may go much farther. Here are the figures; land, $400; buildings and fences, $400; stock and teams, $300; and tools, $100. The first year it is proposed to exempt these purchasers from taxation. Beginning with the second year they will be expected to return what has been advanced to them, in ten yearly installments. This, it is estimated, can be easily done from truck farming, grass and grain growing, cattle and chickens.

A Foe to Loneliness

This colony system is fundamentally sound. Life in the city is reduced to a conformity that makes it nearly impossible for the individual to act by himself. When we undertake the dissolution of the congested mass we are always met by the fact that country life is unendurably lonesome. There is also this advantage that where a dozen families are planted near each other we are able to secure a coöperation in industries apart from agriculture. It has been found possible in this way to establish even Jewish colonies.

In other words, we establish a community instead of a family. Two families, going out together and intending to occupy twenty acres each, can build their houses in adjacent corners so that their neighborliness may be felt, especially in times of sickness. It is the woman who suffers most, and by this sort of building she is not cut off from a daily chat with her neighbor.

I have seen this scheme carried out on a larger scale by four families, each building on the corners of a sixty-acre lot. Their drives ran into each other and their fields were separated only by a line of wire. These four families had a common kitchen, with breakfast room and broad verandas in the center of the plot. There is no reason why every family in the world should have its own food laboratory. By combination the labor is greatly reduced and the cost of feeding four families is cut right in two. Why not carry this plan farther to a group of eight or twelve? Indeed, it might be made to cover as many country homes as you please, only considering convenience.

Now plant your union school at the most convenient and central point. Organize your union church and allow it to occupy the school auditorium, and you have a completed community. Or you may go still farther and have your community bank in conjunction with the post-office. Church and school are not really two offices and may be united for such a community as we suggest. Of course, our aim is to secure moral and intellectual improvement, while we train the young people to the broadest ethical aims by intellectual development.

If we conceive a system of this sort developing, we shall soon find a Grange organized, holding its weekly meetings in the same school building, which is unoccupied for school purposes in the evening. The Grange keeps the families in close alliance and it may cover the general subject of town improvement, or there may be separately a rural art society. This last association will have for its aim to study road improvement, yard improvement, house painting, fruit growing, and all other local questions that pertain to indoor or outdoor comfort and wealth.

This sort of community, made up of recent recruits from city life, we must presume to have brought with it a good deal of taste for music, architecture, and some of those refinements which we can very cordially welcome into country life. With all the rest a tree commission should be appointed, so that the neighborhood and street vegetation shall not be mutilated. One of the chief troubles just now in the country is the utterly misdirected trimming that is going on. We cannot presume that our city friends will understand trees very cordially or scientifically, but in every community there is at least one person to whom this matter of community art can be wisely referred.

The suggestion of a coöperative kitch-

en is not entirely novel and it has been worked out in more ways than one. Not long since I came upon a casual note in a California paper, describing a kitchen of this sort which had become quite the center of a considerable group of homes. It was not only giving satisfaction to the mothers and wives, but was developing domestic art and establishing refinement that could scarcely be considered in individual homes. The State can aid along these lines not only by its free mail delivery and its school system and its postal savings bank, but doubtless may do a good deal, as Missouri proposes, to carry the settlers over the initial crisis. Such a movement, however, must slip naturally into the hands of the people involved.

Coöperation in drainage would seem to be so reasonable as to find no opposition, but a sewer rarely gets through a line of neighbors into a proper outlet without opposition. The same difficulty occurs with pumping water for community purposes from springs that lie among the hills. It is of the utmost importance that there shall be an abundance of pure water and the most sanitary disposal of waste. Unless you can have an artesian well, dropped down deep into rock and planted above possible infection, there must be coöperative water supply. Your city colony will come with an instinct for this sort of united action.

To rid a neighborhood of insects also requires the fullest unity of action. One stable left uncleaned will infect a mile square with flies. One mosquito-breeding cesspool is enough to infect fully as large a neighborhood with that pest. A combined effort in any community in the use of kerosene would entirely rid us of both flies and mosquitoes in a very short time. We have become unnecessarily tolerant of dangerous enemies. If you have a small lake, stock it with fish that will eat the larvæ.

There is no reason why coöperation should not go somewhat farther, without encroaching on integral home life. Building in the country should not defy the very spirit of independent home life; a real house is a growth of the self, of our feelings and our aspirations. It is also a child of the spot that it occupies. A Mr. Edgar S. Chambless has invented what he calls an Endless House. It may be as long as you please, and on paper it looks like the Chinese wall, or a modernized cliff-dwellers' establishment. It is to be of cement, with a railroad in the basement, as well as any number of elevators. It will have the best of water supply and perfect sewerage. It will be lighted by electricity and heated by the same power.

This plan would save the hucksters and farmers from driving from house to house. Engineering up hill, however, and across valleys with a house wall would be liable to meet some facts of a stern sort. Still coöperative building is likely to win considerable progress, as inventions multiply, not only in number but in cost. Mr. Edison's concrete house that is to be cast in a mould and served up to each family, much as gravestones are furnished to the dead, has also some features to commend it. Its adoption would at least serve to get rid of many of the unmeaning structures which are now occupied by country home makers as mansions.

Working on a Smaller Scale

Intensive farming we understand to be the tillage of a small lot in such a way as to get as much from it as others get from ten times the acreage. This brings us very much closer together. Big pastures disappear and great meadows are cut into slices, while the mile-long cornfields are subdivided into apple orchards, berry gardens, and truck patches. It is a grand fact concerning American tillage that great cattle ranges are passing out very rapidly, while the same number of cows are fed by green soiling and silage. From these small homesteads, asparagus, lettuce, and celery, followed by beans, potatoes, and melons, keep the cars loaded nearly all the year round.

As the century gets into the twenties and thirties there will be double and then treble the number of country residences. Our cities will not grow smaller, only relatively. If you believe the present congestion is to be tolerated, I am confident that you are mistaken. Cities will

widen out and open with great rifts of trees and sodded playgrounds, beside gardens innumerable. Skyscrapers are a mood, not a need, and will follow the tower of Babel.

The future city will cover three times the present space, with the same population. The automobile, or its successor, will have a little chance of free motion without killing old people and children. Horses will be out of the problem, except for the pleasure of those who love animal friends better than they love machinery. Aërial transit will deliver most of the goods that are sold and allow the storage houses and stores to be at a much greater distance from the shoppers.

Suburbanism will spread out for miles beyond the core of population, and every home will be surrounded by its adequate garden. Still farther from the roar will be the intensive garden and farm, and you will find a population of six hundred millions, well fed and housed, without isolation and without crowding. We have made immense strides in the way of tools and trolleys, something to work with in the soil and vehicles to convey our produce to market. Mr. Edison is now testing the limits of his storage battery that will need charging once in one hundred and fifty miles. We are not very far from a motor that will carry our produce to market at an insignificant cost.

I believe in private consumers as far as possible, but for the majority of the producers this is impossible as things are. Our surplus goes to middlemen, whose interest is, of course, to get a large share of the profits for themselves. Neither do they understand how to handle my pears and your strawberries in such a way as to bring them to the consumers without loss. We shall see the vehicle before long that will speed the producer to the consumer, over a distance of twenty-five or thirty miles each morning.

Our present limitations for producers, who must touch consumers early in the day, is about ten miles—possibly twenty for non-perishable products. This creates a narrow zone about each city, outside of which there is a very restricted opportunity for the gardener and orchardist. We need and must have this zone widened out to forty or fifty miles. In that way we shall equalize conditions and turn the whole land into one overspread garden. The automobile points the way to this most desirable country life. We must have State roads, smooth for transit, so that produce wagons may reach a safe speed of twelve miles an hour.

But are we quite sure, in this forest of telephones, trolleys, autos, and other discoveries and inventions that are crowding the beginning of the twentieth century, that ere long city purchasers will not come our way, more than we go theirs; speeding among the country homes, before breakfast, to find what they want for the day's supply, instead of waiting to have it brought to their doors? It is not quite clear how far aviation may help along this line.

New Vision for the Farmer

We shall plow together and reap together, and possibly store together. Why not? We do this as soon as our goods leave home; why is it impossible as soon as they are harvested? Is it, after all, a permanent necessity that each and every country home shall have its own separate barns and storage cellars? When grain is threshed coöperatively and marketed coöperatively; when all of our homes have swift motors, adjusted to farm work, why may there not be grain elevators for an associated group of homes and fruit storage houses for a whole group of families?

I am not so sure but that the future country home will lose its barns, as I have suggested it may also lose its kitchen and its cellars. This would certainly contribute greatly to the esthetic side, as well as to the sanitary side of country home making. There would be no lack of individualism if social life should go even farther.

One thing is assured—that the dream of the farmer has greatly changed of late. His vision is no longer that of an isolated house, quite distinctly severed from association with its neighbors, and while in one sense complete by itself, seriously lacking in its power to move with the

world's evolution. He begins to think of a parked farm community, raying out from a central school and library and closely associated in almost all conceivable ways through miles of extent.

The vision of the farmer does not as yet go beyond the rural free delivery of mail and the use of automobiles for market purposes and for tillage, but he has an enthusiasm over something that is to make country life marvelously beautiful and rob it of its most severe features of isolation and toil. These dreams are likely to lead him into schemes that are half thought out and to put him into the power of heartless speculators. In bidding good-bye to my readers I wish to remind them that I have already warned them that they should rarely buy land that they have not themselves inspected and that a large part of the speculative projects for country home making in common are treacherous efforts to get the money of the common people without any adequate returns.

As immigration comes to a final balance and there is no longer a rush of the dissimilar and undigested social element, we shall also react to a nearer social equality. Many years ago our fathers were on a level; we will be on another but a higher level. The coming man and woman will stand on character and not on show. Hayseed is already dead; the outdweller is no longer an outlaw.

Better tools always mean better men and women; and better folk in turn mean better fruit and better animals—they mean more intelligent coöperation between all that goes to make up the country home, dogs, horses, bees, birds, flowers, fruit, and human folk. Every relic of barbarism tends naturally to drop off; thorns will be eliminated from berries as well as roses; strawberries will be as large as pears, and blackberries will grow without spines. Progress is not a chance achievement, but the law of nature as applied to horticulture.

We shall even master climate after awhile. We are already reaching out in this direction, by the conservation of our forests and the drainage of our swamps. Things have gone heretofore on this continent very much haphazard. A few men have been allowed to destroy the windbreaks of vast territories, allowing the blizzard to sweep over territory that God protected by forests. Clean down to Florida the oaks and the pines have been wasted, till there is nothing to stop the fury of a storm that begins in Alaska. If you should ask me for some specific term by which to designate the coming era, I would call it the era of windbreaks—the time when everyone will understand the sacredness of trees and will know their social character and importance.

The more you study this matter the more you will be confirmed in the view that Nature has ordered coöperation everywhere, and when it comes about that we appreciate fully our social duty and civic obligation, there will be a deal less of failure to win a good living. The country home is in reality an alliance, a treaty not only of peace but of friendship between all things that live and the Life that permeates all things.

I should like to have you read "Mutual Aid," a book written by Prince Kropotkin; for it shows how fundamentally the law of good will operates through Nature. Antagonism is not at all a controlling principle, and there is nothing that shows this better than a true country home, where collies and cows coöperate, bees and flowers associate, and over all and through all presides the good will of the human director. Darwin has shown how even the angleworms serve as plowmen and subsoilers.

Evolution Still Busy

If you think we are at an end of evolution you are mistaken. The parcels post has got into every political platform and is acknowledged by all parties as a social necessity. Telephones are probably as cheaply afforded as possible already, but there is no reason why they shall not transmit to a group of homes, lectures and debates. The telephone tea party I have already mentioned, but it is in all soberness a part of coming country life—when our homes will be something more than individual retreats, when they can be practically, if temporarily, lecture halls. The school will no doubt yet be, in this way, so associated with our homes

that the old and the young will be at school together.

The agricultural college is steadily becoming associated with farms, and is likely to go much farther in the same direction. It really is itself a great farm, thoroughly practical and experimental. The professors of gardening and agronomy become naturally associated with us in our outdoor work, while indoors we have a new sort of trained leaders in domestic economy and domestic science. As a matter of fact these men and women are taking their places as social leaders —not as mere recluses or scholars. Knowing the practical things that make for prosperity, they teach them to the people. College is hardly a descriptive name for these institutions, for that word has become identified too closely with schools where scholarship is the end and not the means.

Mr. Roosevelt in one of his most pungent addresses says, "I warn my countrymen that the great recent progress made in city life is not a full measure of our civilization, for our civilization rests at bottom on the wholesomeness, the attractiveness, and the completeness, as well as the prosperity of life in the country. The men and women on the farms stand for what is fundamentally best and most needed in our American life. Upon the development of country life rests ultimately our ability, by methods of farming requiring the highest intelligence, to continue to clothe and feed the hungry nations; to supply the cities with fresh blood, clean bodies, and clear brains that can endure the strain of modern life; we need the development of men in the open country, who shall be the stay and strength of the nation."

I advise you to get a home in the country, not only for your individual comfort, but because it places you in a relation to the world of high responsibility. I advise you to educate your boys and girls for the most intelligent farm life. I advise you to stop glorifying worklessness and to honor achievement. There lies the secret of success in country living.

THE WHITECAPS

BY EUNICE WARD

THE gay little whitecaps afloat on the bay
Are pelting each other with dashes of spray;
They call to the ferries,
The fishermen's wherries,
To slip from the moorings and join them at play.

They warily tickle the battleship's prows
And slap the fat sides of the laboring scows,
They race with the tug-boats,
And worry those snug boats,
The launches, by tripping them up at the bows.

But work is the order of life on the bay,
The sea-going vessels are up and away,
The ferries are tossing
Their smoke in the crossing,
And only the driftwood can linger to play.

THE HANGING ON LITTLE ELK

BY CHARLES ALDEN SELTZER

Illustrated by Clarence Rowe

"YOU WANT TO GIT READY MIGHTY QUICK WHEN YOU GO TO FOOLIN' WITH HIM."

OVER the long table in the bunk-house had fallen a silence. The fourteen Bar Cross punchers, of the Cimarron outfit, who had been bolting their food to the accompaniment of rough jest and good-humored satire, had become suddenly aware of a strange note. All had stopped eating, except Tucson Ed. Several shoved their chairs stealthily back and seemed to crouch in them. Others, with steadier nerves, sat perfectly quiet, awaiting the crisis. They did not have long to wait.

"I reckon you ain't tellin' why you left Guadalupita."

From one end of the long table Bonanza's voice had dropped softly down the victualed lane to Tucson Ed's ears. That person might not have heard it—so adamantine was the expression of his face. He continued eating—apparently unconscious of the fact that thirteen pairs of eyes were gazing tensely at him—apparently unaware of the peculiar chill that had come into the atmosphere of the room.

But presently, when he had slowly eaten the last bit of food on the plate before him, he rested his elbows on the table, closed his hands, and held them loosely against his chest. Then he leaned forward, his eyes glinting coldly as they rested on Bonanza.

"I reckon you must know a lot," he sneered.

Tucson's voice was soft. Its evenness, more than its quality, told of the sinister feeling behind it. While his last words still revolved in the consciousness of his hearers, he made a slight movement with his right hand, and a heavy six-shooter came from somewhere out of his shirt front. In the dead silence he spoke again to Bonanza.

"I reckon you c'n tell these boys right now that you're a false alarm!"

Into the strange quietness his words dropped with a grim resonance that awoke thoughts of death and eternity. Some faces went pale; tense, shrill breathing told of the strain and suspense of the moment.

Yet Bonanza seemed undisturbed. His face held its color, and his eyes seemed to gleam with a quiet amusement.

"I ain't tellin' nobody nothin'," he returned coldly.

"You damned—!"

Afterwards, only one man of the fourteen—besides Bonanza—could have told how it happened. At the instant that Tucson had swung his gun upward, he had awkwardly struck his elbow against

the edge of the table. The bullet had gone wild, striking the wall of the adobe hut full two feet above Bonanza's head. And then, like a flash of light, Bonanza's own gun had come out and was gaping somberly down the center of the table. And before Tucson could recover for a second shot, Bonanza's voice came hard and cold into the second silence.

"Drop it!"

It had been quick work for Bonanza. It had seemed only the space of a lightning flash from the time that Tucson had drawn his weapon until he was laying it on the table, beaten at his own game.

"I ain't goin' to shoot," said Bonanza, smiling saturninely over the space that separated him from Tucson; "it'd be wastin' powder an' lead. An' I ain't hankerin' to be a fool-killer. Give you time you'll git where you're goin'." He made a significant motion toward his throat. "Over in Guadalupita they wasn't wise to you till you was ready to make your git-a-way."

Tucson seemed to shrink into his chair. The eyes of every man in the outfit were suddenly squinted at him with interrogation, trying to read his face for signs that would prove the truth of Bonanza's accusation. But beyond shrinking under the vitriolic words of the saturnine Bonanza, Tucson gave no signs of revealing anything.

"I'll see you again about this," he said.

A case of plain backdown said the eyes of the outfit. Smiles came, winks followed; the room came suddenly out of its tragedy into the lightness of farce comedy. "Yellow," said a man who sat near the center of the table, in a voice loud enough for Tucson to hear.

"I'll see you again about this," sneered another, mimicking Tucson's manner of speech.

"Reckon he'll hurt hisself, foolin' with his gun that-a-way," whispered another sonorously.

Jocularity was again paramount. Apparently the incident was closed. No further reference was made to it by any of the men who had been mere onlookers. Bonanza resumed his meal without again looking toward Tucson. Five minutes later Tucson arose, shuffled carelessly to the door, and disappeared into the shadows that were surrounding the bunk-house.

Then Bonanza spoke. "I want to tell you, boys," he said quietly, "that there man ain't for to be monkeyed with. You all don't want to try an' herd-ride him. I reckon I ought to be tickled to death that I'm able to set here an' tell you that."

His words were received in silence. Already those men who had jibed Tucson were wondering if they had been exactly wise in doing it. Only one of them had actually seen the accident that had prevented Tucson from killing Bonanza, and now, since the latter had spoken, they began to realize that it might have been only one of those slight interpositions through which fate thwarts the desire.

II

THE following morning, McVea, the Bar Cross manager, listened with interest to the range boss's story of the incident of the bunk-house. Ten minutes after he had left the managerial presence the range boss dropped a low word into Bonanza's ear. Bonanza was repairing a saddle cinch when the word came to him, and for a few minutes after receiving it he continued his work on the cinch so that the other men who were about him might not wonder. Then presently he got up and wandered toward the office. He found the manager awaiting him.

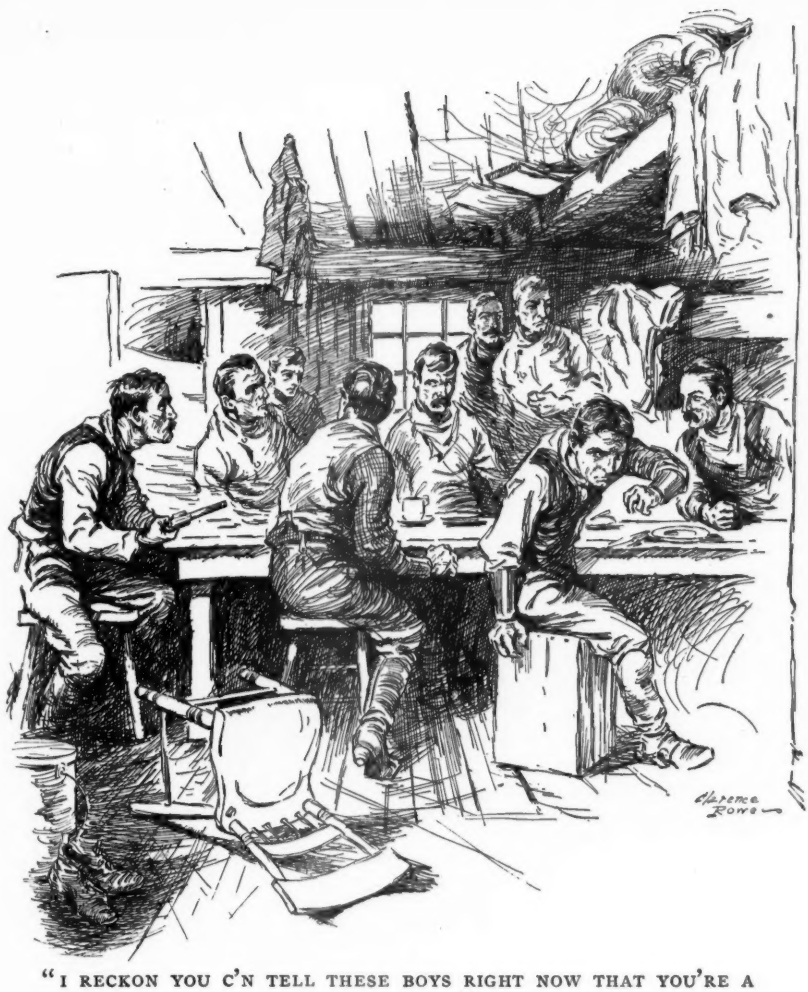
"Set down," he said, as Bonanza halted in the doorway, one foot over the threshold.

The manager motioned to a chair that stood near. Bonanza took it, shoved it against the wall, and dropped into it.

"I reckon you come mighty near cashin' in last night," said McVea.

Bonanza grinned felinely. "That there shootin' was plum re-diculous!" he returned. "Nothin' could have stopped him hittin' me if I'd been two feet taller."

McVea did not answer Bonanza's smile. "You've met up with Tucson somewheres before?" he questioned gravely.



"I RECKON YOU C'N TELL THESE BOYS RIGHT NOW THAT YOU'RE A FALSE ALARM!"

Bonanza sneered. "Met up with him?" he queried. "I reckon you might call it that. When I first saw him, a year ago, he was rasslin' drinks an' cleanin' spittoons in Pete Goin's gamblin' joint, over in Guadalupita. Later, I saw him hittin' the breeze down the Antoinette trail, about a mile ahead of the sheriff. Had a thousand dollars of the station agent's money in his clothes."

"The sheriff didn't git him?" said McVea.

"You're talkin' foolish," returned Bonanza, his lips curling. "I reckon Tucson wouldn't let no sheriff git him."

McVea raised his eyes. "Bad man?" he interrogated.

"Some bad," returned Bonanza. "You want to git ready mighty quick when you go to foolin' with him."

McVea meditated. "That's the worst of hirin' new men," he said; "you don't know what you're gettin'. Liable to be harborin' rustlers unknowin'."

Bonanza stretched his legs, leaning back lazily. "You could say that about me; I've only been here two weeks."

McVea's eyes wandered over the tall puncher. "I reckon you ain't Tucson's kind, or he wouldn't have drawed on you last night." He smiled. "It don't take me very long to git a man's measure. Give me time, I'd have got onto Tucson."

"I reckon that's right." Bonanza smiled dryly. "You're one of them men that c'n size a man up right quick."

McVea leaned forward, a smile of pleased vanity on his face. "I c'n size up men," he said; "that's why I'm here. An' I've got Tucson about right. For instance, what would you say if I was to tell you that I'd got Tucson down as a rustler?"

This was a palpable "feel," based upon what the manger inferred from the incident of the preceding night.

But Bonanza's face was impassive. He looked squarely at the manager and deliberately closed one eye. "If I was sayin' anything," he said, "it'd be that you was makin' a pretty wise guess. But I'm keepin' mum. There ain't any love lost between me an' Tucson. An' I ain't lookin' for trouble. I wouldn't want Tucson to know that I'd been talkin' about him."

McVea smiled and turned to his desk. "I reckon that's all," he said. "You c'n keep right on—not sayin' anything. I'll take care of Tucson."

Bonanza rose and walked to the door. "I'm tellin' you what I told the boys," he said. "Be kind of gentle with the cuss."

He turned and went out before the manager could look up.

For a few days it seemed that nothing would result from this conference. The outfit was working down the Cimarron, and apparently time was wearing the edge off the enmity between Tucson and Bonanza. The former was uncommunicative, glum; he kept to himself as much as possible, taking no part in the campfire talks. Veiled allusions to the incident of the bunk-house only served to increase his taciturnity.

He went his way unmolested, apparently unmindful of the fact that he was being left outside the fellowship. Yet no man took any liberties with him. There was about him a certain lingering threat of cold preparedness for anything that might happen that effectually dampened the ardor of men who might have attempted levity in his presence.

There had been no further reference on Bonanza's part to Tucson's past. Apparently, having planted the seed of suspicion, Bonanza was content to allow time to vindicate his charge. Yet there were scowls when, during the course of their work, the two men met; Bonanza's sneer followed Tucson always. The other men began to predict that a clash would soon come.

And then quite suddenly one day the range boss dropped into camp and spoke a word to Tucson. It was in the early morning, and the men were eating breakfast near the chuck wagon. Tucson said nothing, but rose from his place and began to pack his slicker and look after his saddle. After he had caught up his pony and was ready to travel, he came and stood near the chuck wagon, looking down at Bonanza.

"I'm fired," he said to the latter, his lips tightening over his teeth in a snarl. "I reckon it's on account of what you said that night down in the bunk-house. I'm goin' over to headquarters to git my time, an' I'm goin' to ask McVea. If it's your fault, I'm tellin' you that I'll git you!"

"I ain't sayin' nothin'," returned Bonanza coldly. "But I reckon you ain't goin' to git me." He moved slightly and threw the muzzle of his six-shooter upward, covering Tucson. "If you're thinkin' of that, start now. I'd admire for to make you feel onpunctual."

Tucson made no attempt to draw his weapon. He stood, tall and angular, looking down at Bonanza, the snarl still on his lips.

"You're a damn smart man!" he said, his words writhing through his lips; "but this thing ain't over!" He turned abruptly, swung into his saddle, and rode furiously into the distance that yawned between the chuck wagon and the Bar Cross ranch-house.

III

On the morning of a day three weeks later, the range boss was in the manager's

office, looking over the cattle tally. Patiently and laboriously the manager ran up a column of figures. Then he looked up.

"We're ten short this week," he said. "Last week it was eight an' the week before fifteen. An' it ain't dry to speak of, an' there's plenty of grass."

"I've had the boys lookin' around for strays," said the range boss, puzzled, "an' there ain't none. There ain't any signs of any, an' there ain't a hide or carcass that'd show the wolves had got them."

"An' still we're thirty-three short on the month," returned McVea. "Do you reckon any of the boys have run them off?"

"The boys is square," stated the range boss stoutly; "there ain't been any of the boys missin' for a minute."

"There ain't none of them been drownded?" experimented the manager.

"Huh! There ain't water deep enough in the whole Purgatory country to drownd a coyote!"

"I reckon they've just swallered one another," observed McVea sarcastically. "Yes, that's just what they've done; they've swallered one another!"

"Meanin'?" snapped the range boss.

"Meanin' that there's a leak somewheres—that you ought to find!"

The range boss's face crimsoned. "I reckon you could git a better man than me to run this range if you looked close!" he said harshly.

McVea sat erect. "I ain't sayin' that!" he declared, suddenly placative. "I don't believe you're the fault. What I'm meanin' is that you ought to find the leak. You reckon it's rustlers?"

"I'm aimin' to see," returned the range boss. "It can't be nothin' else. I'm ridin' the Cimarron range to-day—where the outfit is. If there's anyone rustlin' cattle I'm goin' to know it!"

He went out and mounted his pony. The next morning he rode up to the ranch-house and met McVea at the door. He drooped with weariness, his eyes were red and swollen, telling of loss of sleep.

"I ain't been out of the saddle for

"YOU'RE A DAMN SMART MAN," HE SAID.

half an hour since I left here," he said grimly. "But I've found him. He's over on the Cimarron, on Little Elk crossin'. It's that man you fired about a month ago—Tucson Ed, he calls himself."

McVea's lips tightened. "Then that man Bonanza was right," he said. "He kind of hinted that Tucson was a rustler." His eyes lighted coldly. "I reckon we'd better send the boys over an' git him?" he said. "Did you look over his stock?"

"I didn't look," returned the range boss quietly. "While I was there he was watchin' me from behind the muzzle of his six. I didn't think I ought to try an' look—just then."

"Bonanza told me to be gentle with the cuss," said McVea, contemplating the range boss. "I wonder what he meant?"

The range boss smiled. "I wasn't just ready to see if he could be handled any other way," he said. "If Bonanza knows how to handle him I reckon it'd be a pretty good idea to have Bonanza take care of him. There ain't any of the boys hankerin' for the job."

McVea smiled quietly. "That Bonanza's got a way about him that don't

tickle me a heap," he declared plainly troubled, "but I reckon he ain't scared of Tucson."

"I reckon not," returned the range boss.

McVea's eyes filled with a deep significance. "I'm goin' to have Bonanza ride sign on Tucson," he said evenly; "then if one or the other of them gits hurt there won't be much lost."

IV

With the beginning of Bonanza's espionage the Bar Cross cattle ceased to disappear. For two weeks the tally showed no losses. Then Bonanza was withdrawn for a week and the result was a loss of ten. While this might have been a mere coincidence, McVea accepted it as positive proof of Tucson's guilt. He called Bonanza into consultation.

The tall puncher had little to offer. "Far as I c'n see he's runnin' his own cattle," he said, "or them that he claims are his. I counted them one day while he was gone down the crick. There's thirty-three of them. But there ain't a sign on any one of them to tell that they might have belonged to the Bar Cross. If he's rustlin' them he's plum slick!"

"I reckon you watched him close?" said the manager, though he knew that such had been his order.

"You're tryin' to fun me," said Bonanza with a half sneer. "You didn't send me to watch him so's I could have a picnic."

"No offense!" offered McVea quickly. "You could ketch him if anyone could. I reckon it's just as you say—he's plum slick. But rustlin' has got to be stopped!"

"Shore," agreed Bonanza, his eyes on the ceiling. "It's shore got to be stopped. Give Tucson time an' he'll have the whole Bar Cross ranch over on the Cimarron."

McVea studied the tall puncher, but the latter's face was serious. He dismissed him, telling him to resume his watch.

Again there were no losses on the tally. Then Bonanza was again withdrawn and the following week more cattle were missed.

In deadly earnest was the watch now taken up. Not one man of the Bar Cross outfit but knew in his own mind that Tucson was the thief. But it was one thing to know a thing and another to prove it. McVea thought seriously of sending for a gunfighter, but this thought was abandoned on the word of Bonanza that Tucson was "plum quick" with a gun and that there wasn't a gunfighter in the Territory who would take a "chancst" with him.

To the critics who pointed out Tucson's clumsiness with his gun that night at the bunk-house, when he had attempted to shoot Bonanza, the latter replied that he had always considered himself lucky to get out of that scrape so easily. He referred to the fact that on the occasion of their second clash, which was on the morning that Tucson had been discharged, he had drawn his gun at the very moment that Tucson had begun speaking in order to forestall any attempt that the latter might have made. He would not have done this with a man who was considered slow with his gun. He recommended that the entire outfit ride sign on Tucson.

This course was adopted. No cattle were stolen while the men rode sign. But after a little vigilance was relaxed and again cattle began to disappear.

Then McVea took a hand in the game, calling the other men off. For two weeks he neglected his other work and haunted the range in the vicinity of the Little Elk crossing. But, strangely enough, cattle continued to disappear. If McVea happened to be hanging around one section of the range, cattle disappeared from the other.

The outfit rode daily from their camps, nonchalant, carefree, laughing secretly at the manager. McVea could not help but know this. He missed his meals, he lost sleep, his eyes grew worried and dark rings appeared under them. Everywhere he was greeted with quiet smiles, subtle jeers, and encouraging advice.

With a stern patience that deserved a better reward, he laid clever traps for the thief. These were ignored. Then

one night he rode twenty miles out of his way, making a circuit in order to secrete himself in a clump of fir-balsams near Little Elk crossing.

He had talked of this two days before, with Bonanza. The latter had recommended it only as a last resort, terming it a risk to go so close to Tucson on such a mission.

As it turned out, this warning could have been regarded with profit. One afternoon McVea returned to the ranch-house, after having been gone since the night before. His gun was missing, his face was scratched; he bore marks of rough treatment and damaged vanity. He communicated his secret to no one, but later it transpired that Tucson had come upon him from behind, had taken his gun, manhandled him, and compelled him to roost in the fir-balsam during the whole of that night and part of the next day—only letting him off when he had promised to pry around his place no more.

V

On a morning, a few days following that upon which McVea had had his experience with Tucson, he came upon Bonanza, riding his pony along the edge of a coulee about a mile from the ranch-house. Bonanza drew his pony to a halt —a sign that he wanted to talk to the manager. The latter likewise reined in his pony.

"You done anything more about Tucson?" asked Bonanza.

He sat carelessly in his saddle, his eyes roving over the manager with a quizzical interest. McVea thought he had never seen a man with a deeper eye.

"I reckon there ain't nothin' to be done," he said shortly.

Bonanza smiled. "Well, now," he said, "seems if I was runnin' a ranch there wouldn't no durn rustler be nippin' my cattle."

"I reckon we can't do anything without proof," returned McVea glumly.

"How many beeves you missin'?"

"Forty-odd."

Bonanza smiled again. "Tucson's got forty-seven," he said. "I counted them yesterday while they was grazin' in the basin near Little Elk. Curious that Tucson should have forty-seven beeves, when you're missin' just about that many. Do you reckon he could have got them from Tucker, over at the Lazy J?"

McVea shook his head negatively. "It's a hundred miles to the Lazy J," he returned; "he wouldn't drive no beeves that far when they was some around Little Elk. Besides, he ain't been away long enough to do it."

Bonanza allowed a slow glance to travel over the manager. "If I was runnin' things I'd take it that them forty-seven beeves belonged to the Bar Cross."

"You couldn't prove it," said McVea. "An' you can't do anything unless you ketch him with the goods on."

"Mebbe not," returned Bonanza coldly, "but I reckon I'd have someone go over there an' git the beeves."

McVea sensed a deep meaning in Bonanza's words. He leaned forward. "If you was managin' the Bar Cross, who would you send over there?"

Bonanza looked steadily at the manager. "I'd pick out a man that I could trust to keep his head shut. I'd tell him to go an' git them beeves, an' I'd say nothin' about how he was to do it."

"I reckon you could tell me where I could git such a man?" inquired McVea significantly.

Bonanza smiled mirthlessly. "If you was lookin' right hard you could see one right now," he said.

McVea drew a long breath.

"If I was manager," continued Bonanza, "I'd pick out such a man. Then I'd give him about five hundred dollars an' tell him to go ahead."

McVea sat suddenly erect. "Look here!" he said; "let's talk business! It wouldn't do a bit of good to git the beeves an' let the man git off. He'd git more. What's needed is to git the man. When the man's gone it's easy enough to git the beeves. You reckon?"

"Shore. No one could git Tucson's cattle without gittin' Tucson first. I was meanin' that when I spoke. I ain't got no love for Tucson. I ain't forgot that he tried to shoot me. I'd admire to git paid for puttin' him out of business."

"You git the five hundred!" said McVea. "That's settled." He urged his pony forward, but stopped when he heard Bonanza's voice.

"It ain't settled," he said slowly. "I've got to have the money first. It's got to be cash, an' I want what's comin' to me on top of it. That'll make five hundred an' seventy. If I git Tucson I'd have to hit the breeze immediate. I reckon there'd be some talk amongst the boys."

"The money'll be ready," assured McVea. "Day after to-morrow the boys are goin' down the Purgatory, an' I'll go along with them to Trinidad to git the money."

"Correct," returned Bonanza. "I reckon Tucson's as good as dead."

VI

On the day appointed the outfit issued from the Bar Cross headquarters to take up the long trail to the Purgatory. McVea accompanied them, telling them that he was going to Trinidad.

The next day he returned alone. All the men—even to the blacksmith—accompanied the outfit. The ranch was deserted, except for the manager and Bonanza.

That night Bonanza rode up to the ranch-house door and dismounted. McVea saw him and called him to the office.

"You got that money?" questioned Bonanza as he came close to the manager.

McVea nodded. "Brought it over from Trinidad to-day," he returned.

Bonanza smiled grimly. "Git it!" he commanded; "an' git on your cayuse. I've got somethin' to show you!"

Ten minutes later the two swept out on the plains, riding in the direction of Little Elk crossing.

"I reckon you got him?" questioned McVea, eyeing the stern-faced puncher, who bestrode his flying pony silently, always a pace or two in advance of the manager's laboring animal.

"Wait!" returned Bonanza, without looking around.

For an hour they rode on, saying nothing, with a big yellow moon at their backs. Then presently they came to Little Elk crossing and saw Tucson's cabin, snug in a patch of moonlight that straggled down through some trees. There was no light in the cabin; no sign of Tucson.

"I reckon—" began the manager.

"He's over here," interrupted Bonanza.

He urged his pony through a clearing and then followed a narrow trail that led deep into a cottonwood grove. For several minutes this trail zigzagged through the wood and then suddenly broke out into another clearing. As they reached the fringe of trees the two ponies reared and came to a halt, trembling. Squarely in a patch of moonlight on the edge of the clearing a man's body swung, dangling from a rope's end, like a pendulum.

"That's him!" said Bonanza grimly.

McVea drew a deep breath, his face paling and hard lines coming into it as he watched the grewsome thing swinging idly in the breeze. Then, the shock passing, he urged his pony closer and peered intently at the face of the man.

"It's Tucson!" he said in an awed voice. "God!"

He did not remain long in the clearing. He urged his pony about and clattered over the back trail, Bonanza following. When they reached the edge of the wood McVea turned and looked at Bonanza.

"How in hell did you do it alone?" he said.

Bonanza smiled felinely. "I reckon that's my business," he said coldly. "I got him an' that's enough for you. "I'll trouble you for that five hundred an' seventy."

McVea passed the money over, his hands trembling in his eagerness to have the transaction finished. And then for a moment they sat silent in their saddles on the edge of the wood. McVea cast a shuddering glance back toward the clearing.

"I'll send some one over to-morrow to bury him," he said. For an instant his face softened. "I'm sort of sorry it had to happen to the cuss," he added.

Bonanza grinned coldly. "He had it comin'," he said. He turned his pony's

LATE THE NEXT AFTERNOON McVEA AND ONE OF HIS PUNCHERS STOOD AT THE BASE OF THE TREE, READING TUCSON'S BRIEF NOTE.

head toward the crossing. "I'm hittin' up the breeze to the Two Butte," he said shortly. "S'long." He rode toward the crossing, without looking back.

For a moment McVea sat in the saddle, watching him. Then with a half frightened glance at the cottonwood, he spurred his pony furiously over the plains toward the ranch-house.

VII

BONANZA did not go far. He rode only into the shadows of some trees on the opposite side of the river. When he could no longer hear the rapid beat of hoofs on the hard sand of the plains, he turned his pony's head and recrossed the river. Riding to the edge of the cottonwood, he halted his pony on the edge of the slope above the river and watched McVea and his pony disappear into the darkness. Then he rode into the clearing where Tucson's body swung.

He dismounted and walked into the shadow of some shrubbery that grew very close to the tree from which Tucson was suspended, pulling out of the

shadows a small wooden soap box. This he shoved under Tucson's feet. Then he loosened the rope that was tied around the trunk of the tree—working very deliberately.

"Git a move on, y'u ol' hoss thief!" said Tucson suddenly. "Durned if I didn't think you'd gone an' left me!"

"I was considerin'," returned Bonanza. "But I knowed it wouldn't do any good. You'd have cut the rope an' spoiled it an' then you'd have camped on my trail 'til you'd got me." He stood up, laughing ironically. "I reckon McVea come pretty near bein' scared," he said.

"If he hadn't bin," said Tucson, as he slid down upon the box, "he'd have seen this soap box, which I didn't quite kick out of sight, an' he'd have seen this nice little piece of rope that I got tied around my neck to make it look like a reg'lar hangin'."

Bonanza was packing his slicker, placing into it the small leather bag that McVea had given him. He turned while engaged in this task and smiled again at Tucson. "I reckon you c'n hand that strap over, which you've got under your arms," he said. "I need it to fasten up that five hundred an' seventy. An' I might want it to hang you with again."

Tucson drew off his coat, revealing a broad strap buckled tight up under his arm-pits, to which was knotted the rope from which he had been suspended.

"I reckon we ought to write a little billy doo to McVea, so's to let him know that he ain't exactly as wise as he thinks he is!" he said.

"You're the poet lariat of this here outfit," said Bonanza, grinning, still busy at the slicker.

Producing a soiled piece of paper from somewhere about his person, Tucson wrought a brief note in picturesque chirography, pinning it to the tree from which he had been swinging a short time before.

"I don't reckon anyone'll ever see it though," he said when he had finished and was mounting his horse, which Bonanza had produced from somewhere in the shadows.

"Hush!" returned Bonanza, swinging into his own saddle. "Someone will shore see it; McVea's goin' to send someone over here to-morrow on purpose to bury you."

Late the next afternoon McVea and one of his punchers stood at the base of the tree, reading Tucson's brief note.

"Mr. McVea"—it read, the ironic prefix underscored—"we're leavin' you now. It's the dead man that's writin' this. We thought that mebbe you'd like to know that that day when you was roostin' in the tree, Denver was back in the bush laffin' at you. He'd told me that you was plum slick at sizin' up men. We're leavin' you to think that over. Ta, ta.

Yours very trooly,
SANTA FE, alias TUCSON ED."

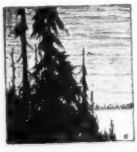
"Denver," said the puncher, contemplating the note with a humorous eye, "an' Santa Fe. I reckon them's the two guys which made a howlin' jackass out o' that Cimarron sheriff."

He caught McVea's look of inquiry.

"It's a long story," resumed the puncher. "But they got two hundred an' fifty from the sheriff, provin' that he was easy."

McVea stiffened. "Meanin' that because they got five hundred out of me I'm twiced as easy?" he demanded.

"I reckon I didn't say that," returned the puncher, his eyes swimming with something that McVea could not fathom.



WHEN THE TROUT ARE RISING WELL OTHER THINGS DO NOT MATTER.

TROUT FISHING PROBLEMS

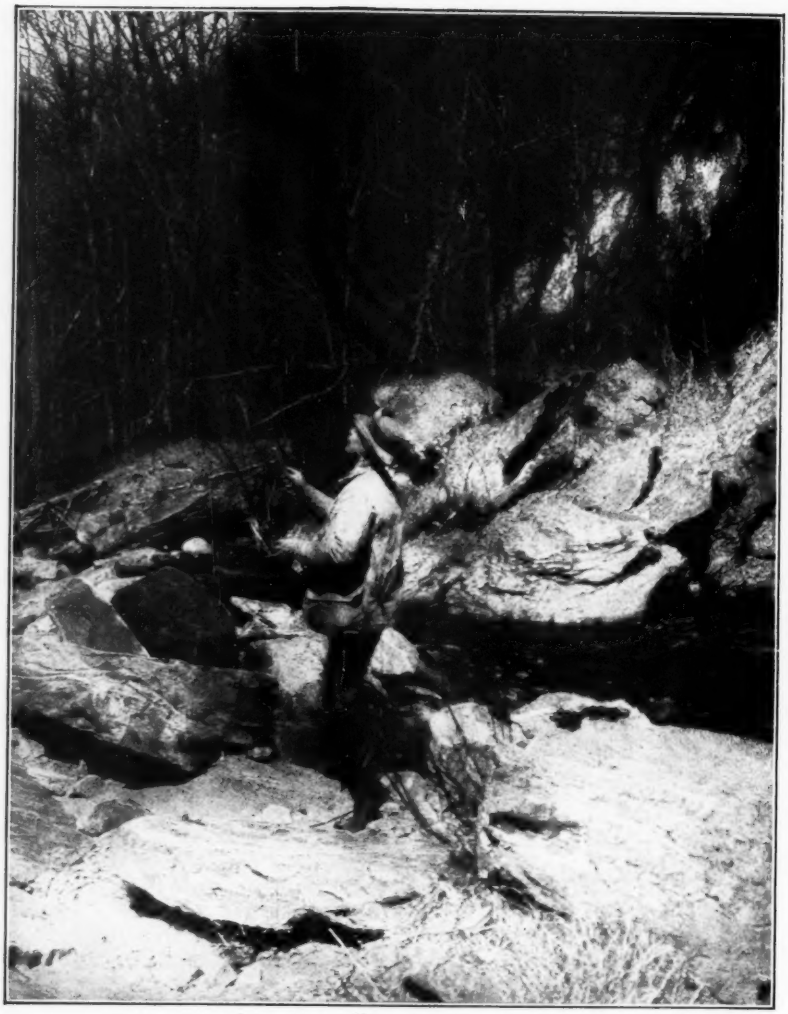
BY SAMUEL G. CAMP

Photographs by the Author

SYMPATHY is a state of mind easily, even automatically, assumed and it costs nothing. However, as a usual thing, the other fellow's troubles are the least of your own. This is particularly true of trout fishing. It is mighty easy to sympathize with a friend when he gets "hung up," falls in the river, fights a losing fight with a barbed-wire fence, smashes his rod, consistently fails to induce a trout to rise, or otherwise—and the different varieties of hard luck in trout fishing are of several more than fifty-seven—succeeds only in getting himself into difficulties.

It is when these disasters severally or collectively—and it is generally collectively—are visited personally upon you that you realize in the truest and most acute manner what Trouble really is. Of course, it is distinctly easier to be philosophical and coldly practical on a typewriter than when standing waist-deep in a swift trout stream with your flies fast in a tree-top for the fifth consecutive time in as many minutes; notwithstanding which, if you keep your temper and go about it right, getting out of trout fishing difficulties is often easier than you think.

It may be stated as a pretty safe general proposition that if the trout are rising well other things do not matter; under such circumstances the customary vicissitudes of the angler in the way of misfortune become merely incidents. The acid test of the angler's sportsmanship, skill, and temper comes when the trout rise infrequently or not at all.



GETTING "HUNG UP" IS ALL IN A DAY'S WORK.

The veteran fly-caster has been up against this state of affairs so often that he is apt to bear it equably; not so the novice or near-novice.

When you fail to get rises Keep Your Temper and work hard; keep your line wet. Never, as you value a comfortably full creel, persuade yourself that the reason for your failure is the lack of trout in the stream. That's a mighty poor excuse for unskilled fishing. There are trout in the stream. The chances are that, right along, you are fishing over bushels of them. Of course, in every trout stream there are stretches of poor water; and if you are acquainted with the stream you will know where these are. But if you are casting over a known reach of good water, without success, make up your mind right away that something is the matter with your fly-fishing—the trout are there.

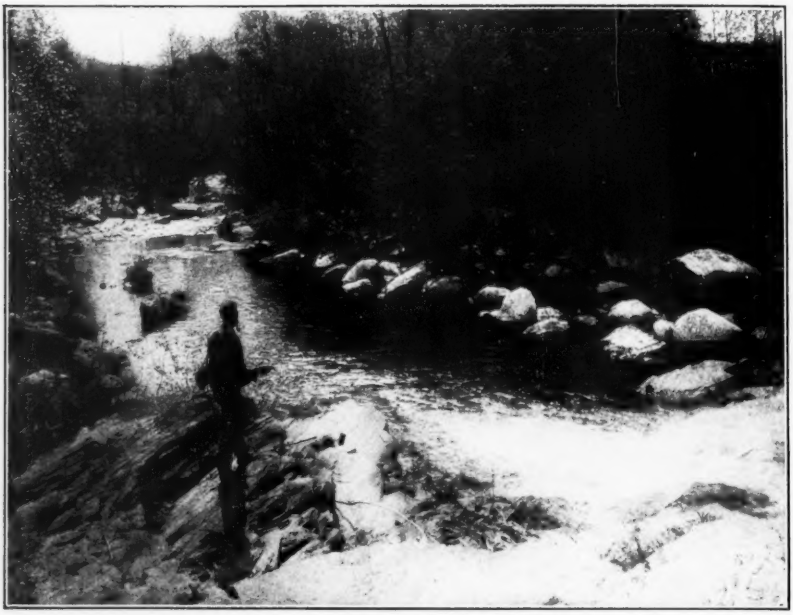
It has been proved conclusively to the writer times without number that tem-

CULTIVATE GOOD JUDGMENT AS TO DISTANCE AND DIRECTION.

porary inability to induce a trout to rise in a given stretch of water must never be attributed to lack of fish. Next day—even one hour after you have fished that water—you or someone else will raise them there in abundance. And it pays, too, to fish the reputed poor water and fish it carefully.

Continued failure to get a rise can only rightly be attributed to the use of wrong methods and tackle for the time being and the existent stream conditions. The first counter-move to make is to change your flies. In changing flies, however, one should do so with some definite idea as to the purpose of the exchange, not merely "putting up" two or three new flies on the chuck-and-chance-it principle. The change may be either of size, retaining the original patterns of the cast, or flies different in pattern may be substituted.

Personally when fishing familiar streams, and so being fairly certain of



USUALLY THE BEST WAY TO CAST IS ACROSS THE STREAM, WHEN CONDITIONS PERMIT.

the flies most apt to prove successful, I always favor change of size before change of pattern. When fishing strange waters, however, I use a cast made up of flies dressed on number eight hooks, the normal size under average conditions, and if unsuccessful I change the patterns. As a rule, of course, flies of subdued coloration are most used in trout fishing in civilized waters; when you change the patterns of your cast favor brighter flies.

Concretely, if you are fishing the Beaverkill and Cahill, change to coachman and grizzly king or Wickham's Fancy. Also, if your fly-book contains some floating flies and you know how to use them, try fishing "dry." Change of size should generally be to the smaller sizes—but not always. If you are fishing a large, deep stream, it may be that, for the time, flies on number six or even four Sproat hooks will be none too large.

One of the most difficult situations in which the fly-caster is apt to find himself is when the trout are voraciously and visibly feeding upon some natural fly at the time very abundant on the water. Customarily, in such case, the fish will refuse to notice even the most skilfully presented artificials. To the novice this state of affairs is, perhaps, the most trying of all; the sight of the trout, often large ones, feeding upon the natural fly induces the fond belief that one has only to cast the flies in order to make connections with a record trout; also, the visible feeding of large fish—and the novice is by no means alone in this—induces generally an acute case of buck fever.

To the best of my knowledge and belief the only sure way to take a trout under such conditions is to identify the fly upon which the trout are feeding—merely as to size and coloration, it is not necessary to know its scientific name—and to approximate it as closely as possible with a dry fly.

Last season while fishing a large pool in a Connecticut trout stream I observed a pound fish rising with the regularity of clock-work to some fly. Of course, I went for him at once, using a coachman

CHANGE OF FLIES SHOULD ORDINARILY BE TO THE SMALLER SIZES—BUT NOT ALWAYS.

and Cahill fished wet. The trout paid them no attention whatever, but while the artificials were actually on the water would take the natural fly within a few inches of them. While I was changing flies and casting for him, keeping well out of sight and casting as cleverly as I knew how, the fish rose to the natural fly a dozen or more times.

Finally I obtained a fair sight of one of the little flies to which, presumably, the trout was rising. The closest approximation in the fly-book appeared to be a golden ribbed hare's ear dressed on a number twelve hook and tied "dry." This fly I carefully waterproofed and cast singly about three feet above the spot where the trout was rising. When it had floated down to the proper spot it was taken at once without hesitation. This fish, by the way, when landed proved to have been seriously maimed at some previous time, the under jaw being "slewed" to a direction almost at right angles to the upper. Yet the fish was plump and apparently in first-class condition.

Under similar circumstances a wet fly bearing a close resemblance to the natural fly upon which the trout are feeding will sometimes be successful; it is a fact, however, that when the fish are thus visibly feeding the fly-caster can only hope to kill a trout by the very best of fly-casting or the very best of good luck. Also it is a fact that if you carefully spot the rises, endeavoring to identify the individual trout, you will often find they are little fellows. Sometimes, too, you will find that the flies upon which they are feeding are almost invisible midges practically impossible of imitation by the artificial fly.

Unless the fish break water when rising to the natural fly—and often they do not, simply making a "dimple" on the surface—it is very difficult to differentiate between the rises of small and large trout, particularly when the fly-caster is some distance away. Before going after any certain rising trout—and this rule always applies to fishing the dry-fly—it is well, if possible, to be sure you are not wasting your efforts on a fingerling.

If changing the flies does not produce results, the method of fishing them should be varied. A reversal of fortune is often brought about by fishing the wettest of wet flies. Particularly early in the season, or later when at any time the stream is high, the submerged fly is most apt to be the winner. Cast across the stream, allowing the current to sweep the flies downstream in a semi-circle, keeping a taut line by stripping in with the left hand.

Working the End Fly

Casting and fishing the flies in this manner, the end fly will usually be submerged from three to five inches, while the dropper is considerably nearer the surface. Eight out of ten fish will take the end fly provided it is of the right pattern. The season of 1910 was very favorable for early fly-fishing. On the second day of April I took nine trout on the fly, everyone on the coachman fished as above noted. During the next few days eighty-nine trout out of one hundred were taken on the coachman, fished very wet, eleven being taken on the dropper fly, a Beaverkill or cowdung.

Another situation generally productive of lost tempers and empty creels is when the trout are rising short, simply coming up and rolling over on the surface behind the fly without touching it or, at best, merely "nosing" it in such a manner that hooking a fish is almost impossible. Various theories have been advanced to explain this state of affairs of which "curiosity" is perhaps the most plausible. At times a trout, even when not feeding, will rise to all sorts of small floating objects, little willow leaves, small pieces of white paper, anything that looks attractive and possibly suggests closer examination. At times, also, they will even take such objects into the mouth, expelling them instantly thereafter.

Theories aside, here is a condition calculated to defeat the efforts of the expert and novice alike. First make sure that you are not striking too slowly, after which, in view of my own experience, a change to the very smallest flies is most apt to produce moderate returns. It is a fact, of course, that when using very small flies a large percentage of strikes will be missed owing to the small size of the hooks; however, an occasional trout taken under such circumstances is decidedly better than complete failure.

You will be surprised, too, to see how even the smallest of hooks, if once it gets a fair hold, will "stay with" a large trout. I have sometimes actually been led to believe it almost axiomatic that the smaller the hook the better the hold —but, undoubtedly, more rises are missed with the very small flies.

Tournament casting is not fishing, but the expert caster, the man who has absolute control of rod and line at every stage of the game and under all conditions—so far as this may be reasonably attained—possesses a great advantage over the caster whose work with the rod may be termed slipshod. In every trout stream there are reaches where the casting is more or less difficult owing to overhanging brush, difficult wading necessitating long casting, or on account of other circumstances of a similar nature. In such places the man who can accurately swing a fairly long line, with good judgment as to direction and distance on both the forward and back casts, is apt to have things pretty much his own way —and places of this character notoriously hold the best fish. Unfortunately, however, these are the places which are liable to develop into little infernos for the novitiate with the fly-rod.

It is very easy for me to say, in regard to fly-casting under difficult stream conditions, develop good judgment as to distance and direction, and see to it that your flies go where you think they are going. As a matter of fact, while I believe that faithful practice will go far toward making one a fair obstacle fly-caster, I am certain that the man who casts best under the worst conditions does it instinctively, and instinct is a pretty difficult quality to cultivate.

Often I have seen an angler make cast after cast, missing by a hair an overhanging branch on the back cast and shooting the flies under projecting brush on the forward cast, with never a "hang up" in half a mile of the most difficult water. I do not believe that a perform-

JUST AS HARD WORK AS "SIDE-HILL" HUNTING IN NEW ENGLAND.

ance of that sort can rightly be credited to anything but unerring instinct and, of course, good eye and much experience. Correct judgment as to distance and direction on both the forward and back casts is the end to be attained, and this you must try to acquire to your natural limit of proficiency.

Right here it would be well to note a distinct practical difference between the literature of fly-fishing, fly-casting as usually done in tournaments, and fly-casting for real trout in a real trout stream. The overhead cast is the one which has received almost the entire attention of fishing writers, whereas, as a matter of fact, the horizontal cast is by far the most useful to the stream fly-fisherman.

The horizontal cast is the best to use when fishing against a moderately strong wind; it is also the best to use, when casting a short line, to avoid frightening the fish by the overhead swing of the rod, and, since the rod is kept well down

it lessens the possibility of heliographing the danger signal to the trout by flashing ferrules; it is always the most advantageous cast—indeed, is generally necessitated—when brush fishing; and, on the authority of Mr. F. M. Halford, is the one best calculated to deliver a fly dry and "cocked" on the water.

This cast, it seems to me, is the one above all others which the man who does not care to shine in casting tournaments, but does desire to become a skilful fly-fisherman, should practice. If you become adept in this style of casting, many "trout fishing difficulties" are thereby eliminated. In all essentials the horizontal cast is quite similar to the orthodox overhead cast, except that in both the back and forward swing the rod travels parallel with the water. Be sure to make a very quick return since the flies have only a short distance to fall before they will strike the water behind you.

The chief difficulty you will have with this cast is in dropping the flies exactly where you want them. The overhead cast is the best for accuracy since the point of the rod throughout the forward cast is moving in a line with the spot where you wish to drop the flies. This is not the case with the horizontal cast, and the difficulty experienced is something like that found by the beginner at wing-shooting who, on a swinging shot, finds it almost impossible to pull the trigger without stopping the swing of the gun. However, all necessary accuracy is by no means impossible of attainment with the horizontal cast, and, as in other things requiring some small skill, practice makes perfect. Everlastingly keeping at it is the only rule for success.

"FIGHTS A LOSING FIGHT WITH A BARBED-WIRE FENCE."

Steady employment of the horizontal cast greatly lessens the liability of a hang-up—even when you forget to look behind you before casting, and that is one of the things not to forget when casting in a new place; even if the flies do get fouled they will be only a little distance above the water where you can easily reach them. Getting hung up oc-

casionally is all in the day's work. One would have to be superhuman in order to avoid it. There are very many things to think about when fly-fishing, and now and then, something is forgotten.

First, before making any effort to free the flies, find out in just what manner they are caught. Then a little gentle manipulation of rod and line with the proper force and in the right direction will usually bring them back. If the point of the hook has penetrated the bark on a branch in such a manner that you cannot free it by a direct pull from any direction whip the rod up and down and sidewise, having a slightly slack line; the waves communicated to the line will first loosen and finally cause the hook to fly out.

Although a little aside from the question—and not so very far at that—it might be suggested here that stream fly-fishing for brook trout, in an average swift and rocky trout stream, is hard work; consequently you cannot do your best work unless you are in fair physical condition. To wade a difficult stream all day, casting accurately and effectively in all sorts of places and under all sorts of mostly undesirable conditions, and, above all, safely hooking a large percentage of your rises—which you must do to make an ordinarily good showing at the end of the day—demands stamina, good nerve, and good eye, none of which things can be cultivated to any great extent by holding down an office-chair. Almost any sportsman will assure you that stream fly-fishing is quite as hard work as "side-hill" hunting in New England, and if there is any harder work than that I do not know what it is—unless, possibly, it is staying home on the opening day for trout.

THE MEADOWLARK

IT was at the edge of a dense sweet-gum wood embroidered with golden rod, asters, and wild sunflowers—with the reddish-golden sunset glinting on the lower tree trunks—the hour of day's passing, of trailing mists on the bordering meadows—that I saw and heard him. I had come a long way without a note of bird-song; with but a glimpse of hurrying wings (for most of the singers had gone South); and I felt that I could not go home without hearing his lovely flute-call.

He has another call, a diminutive rattle sounded usually when he first takes flight, but his flute-call, though not a note of it is changed the year round, is his distinctive music—tenderer, softer in quality during the fall and winter. Heard at twilight, then, it is like a strand of silver mist trailed across the meadow; a far-off voice of memory—a spirit call sad and inexpressibly sweet.

When he saw me coming he crouched in the grass, his yellow breast almost hid, his tail flirting its white, outer feathers in view; but as I waited patiently, perfectly still, he straightened up: his flute rang clear, and presently, out of the sunset, like a faint echo came an answer.

The meadowlark is a great lover of fences, stumps, wheat shocks, and haystacks. He has an amusing way, too, of watching over his shoulder, anyone approaching, his back humped up, his wings slightly spread, his tail twitching, sounding his rattle, on the point of flying, and, as he springs off on his half-flapping, half sailing flight, he will still look back as if to say: "You can't catch me napping!"

For years, even though our statutes forbid it, these birds were wantonly shot by every fellow who wanted to practice wing shooting. I have seen hundreds of them killed and left lying on the meadows. Even now it is difficult to enforce the law, and a broader sentiment is somewhat sniffed at. Yet, notwithstanding all this, I believe the meadowlarks are increasing. In the winter they may be seen in great flocks on our meadows.

Their bright breasts; their high-pitched mellow flutes—where will one find cheerier color or sweeter music?

From a Copyrighted Photograph by T. W. Ingersoll, St. Paul, Minn.

THEODORE ROOSEVELT THE RANCHMAN.

This photograph was taken in the Bad Lands near Mr. Roosevelt's ranch nearly thirty years ago. So far as we know it has never been published before in any magazine. Several articles by Mr. Roosevelt on his ranching experiences appeared in this magazine in the eighties.

SPEEDING UP THE MOTOR BOAT

BY LAWRENCE LARUE

THE question of speed in a motor boat is an intricate one, as there are many factors to be considered; and these do not always give the results that are expected. A fleet of boats may be built, all of exactly the same size, constructed from the same patterns and equipped with the same make and size of motor, and yet there may be a consistent difference of from ten to twenty per cent between the speed of the fastest and slowest. It is such results as these, consistent by virtue of their inconsistency, that puzzle not only the owner, but the designer and builder as well; and it is safe to say that not a single one of the most expert of the latter can accurately determine what speed a motor boat will make until she is actually launched and tried out under the best of running conditions.

If the expected results are not then obtained, it may require no small amount of experimenting before the real difficulty is found; when it is believed that an increase in power will produce the desired speed, it may be discovered that this will not be nearly so effective as a simple change in the pitch of the wheel. It is small wonder, then, that both expert and amateur will be found making frequent changes in the details of his boat in search of that elusive extra mile-an-hour.

The power plant will probably receive more than its share of praise or censure, according to the performance of the boat, and it is to this that the ordinary owner will first direct his attention if any increase in speed is desired. The greater the speed desired, the more powerful must be the motor installed to drive the boat. But it must be remembered that by power is meant the actual ability to do work, and not necessarily the size of the motor or bore and stroke of the cylinders. The old-style motors of ten horsepower were much larger and more clumsy than the present-day engines developing over twice that power, and while, under the same conditions, a greater bore and stroke will give an increased power, it is the actual test of the motor on the blocks that really counts.

But a more powerful motor is not an Aladdin's lamp that may merely be rubbed with the starting crank to shoot the boat off at a greatly increased speed. There are, in fact, certain limits beyond which a boat may not be driven, no matter how great the power installed, and this applies to the motor canoe and converted cat boat as well as to the especially designed racer. The tendency to "overpower" is one of the great faults of the average amateur and of many builders; every design has a certain speed beyond which any increase in number of cylinders or size of motor is an actual waste of power.

An incident illustrating the futility of crowding excess power into a hull that is already being driven at the top speed for which it was designed is found in the case of one of the well-known racers of a few years ago. This particular craft was thirty feet long, and when equipped with a forty-eight horsepower motor, could maintain an average of twenty-four miles an hour—a speed considered remarkable in those days. But her owner was not satisfied and decided that if he could get twenty-four miles with forty-eight horsepower, he would have no trouble in making a world-renowned racer if a one hundred and fifty horsepower motor was installed in her.

He made the change, but instead of being able to travel over the water at the rate of thirty-five miles an hour, as he expected, he found that his craft could make scarcely a mile an hour more than she could with her old motor, and that

the greater part of the increased power only served to drive her *into* the water, instead of *over* it. When the motor was opened to its full power, the hull almost submerged itself in its own wave, and it was found that the fastest running was obtained when only about one-third of the available power of the engine was used.

Vagaries of Power

This, of course, was an extreme case of ignorance on the part of owner and builder (or re-builder, rather), but results of this nature are liable to be obtained, to a less extent, when applied to smaller boats of low power and slow speed. "Let well enough alone" is a good maxim to follow, although this does not mean that better results cannot be obtained often by increasing the power of a motor boat. Many hulls are not equipped with an engine sufficiently large to obtain the speed for which the craft was designed.

Even in this case it will require a greater amount of additional power than the owner will probably deem necessary, for the resistance to the passage of a boat through the water may be said, in general, to increase as the square of the speed, and the power necessary to obtain a greater speed has been found to vary as the cube of that speed. This, perhaps, is a sufficient reason why the power in a certain hull may be doubled with an attendant increase in speed of but one or two miles.

On the other hand, even though the increased power necessary seems out of all proportion to the results obtained, this is not necessarily all lost. Take, for instance, the case of a heavy, thirty-foot pleasure boat, constructed more for service and comfort than for speed. A twelve horsepower motor may drive this craft at eight miles an hour, and yet double this power would scarcely serve to shove the heavy boat through the water a mile an hour faster. But while this added power would not exhibit its presence by a noticeable increase in the speed of the boat, other craft could be taken in tow with no apparent reduction in the original eight or nine-mile speed of the tug boat.

The power plant of a boat can be increased or reduced to suit the desires of the owner, but once the shape and size of the hull have been decided upon, changes of this nature are not easily made. Consequently, the "lines" of the boat become really of foremost importance in a consideration of speed. The best designed hull for any practical purpose is that which is sufficiently large and heavy to carry the load intended for it, is seaworthy, and yet one that will travel over the water and will make as little wave and disturbance as possible. A boat which "pulls the whole river behind her" is either overpowered and is being forced through the water at an uneconomical speed, or she is poorly designed and her lines offer a greater resistance than should be the case.

Although many boats are designed to "draw down" at the stern when under way, this characteristic should not be carried too far, as an undue drag is then formed by the after half of the hull. The once popular canoe model of speed boat gave way to the torpedo stern, and this, in turn, has been replaced by the moderately wide hull with the "V-transom" stern, a design well adapted for almost any purpose, from a small, one-man "runabout" to a racer or a large cruiser. This model raises slightly at the bow at the higher speeds, but the under side of the stern is flattened so that the submerged portion is pushed over the *surface* of the water, rather than through it.

This is the principle applied to the hydroplane, except that the under side of this model is shaped in a series of steps slanting from stern to bow so that, as the speed increases, these successive steps, or planes, will rise out of the water and the hull will finally be riding on a single surface that will glide, or slide, with much less attendant resistance than would be the case were the entire hull forced through the water. Other variations may be applied to the design of the hydroplane, but all are developed on the theory that a hull that skims over the water meets with less resistance than does one that must move aside a great amount of water in order to push its way through.

Although some of the highest speeds attained by a motor boat have been made in a hydroplane, this is not yet adapted for an all-round pleasure, speed, or work boat as is the ordinary hull, and consequently such a design does not attract the interest of the average boatman. There is no reason why the generally accepted type of hull should not remain the standard for any motor boat, except racing freaks, for years to come.

If a hull does not seem capable of attaining the speed expected of it, the impulse of many a builder seems to be to "cut her in two and add five or six feet to her length." Although this will be a time-consuming operation, it will be effective to a certain extent, for the speed of a boat increases with its waterline length. On the other hand, the greater the beam of a boat, the slower will be its maximum speed.

The observation of these two rules will result in the conclusion that a hull that is "stubby and square" will never succeed in landing a racing trophy if it is competing with a long, slim craft. But craft of "toothpick" proportions are unstable and unseaworthy and can be of no possible interest to the man looking for a practical boat that will combine utility and speed in the proper degree. For pleasure craft of from twenty to forty feet in length, a beam of from one-fifth to one-sixth this measurement is a good proportion which will admit of both stability and medium speed.

An increased speed may sometimes be obtained from a motor boat by making changes other than those in size of engine or design of hull, and these are the refinements that help make the average pleasure boat of to-day from two to five miles faster than its sister of a few years ago. It has already been pointed out that the bow of a boat should not rise from the water more than a certain amount when it is under way, and that the V-shaped transom was designed to keep the proper length of the hull under water. But the tendency of all hulls when traveling at normal speed or above is for the stern to settle an undue amount, and in the case of old style boats with the fan-tail stern and such craft as the converted cat boat the shape of the after section does not prevent this undesirable dragging and consequent reduction in speed.

This trouble can be easily remedied, however, by simply attaching a piece of sheet iron to the stern at the waterline so that it will act as a plane when the after portion of the hull tends to drag down. This piece of sheet iron should be cut the same shape as the stern deck so that no portion of it will project too far beyond the hull and be damaged by a wharf or rock, and it should be well supported by struts riveted to the iron at one end and screwed into the planking at the other.

When the Stern Draws Down

The value of such an attachment has been demonstrated many times, but in no instance of my personal knowledge more strikingly than in the case of an old twenty-five foot cat boat equipped with a twelve horsepower motor. When first installed, this motor seemed to be too powerful for the craft, the stern dragged down, and eight miles an hour was the highest speed that could be obtained. A sheet iron plane was attached in the manner described above, and by forcing the hull to travel on the lines for which it was designed, the speed, with the same power plant, was increased to eleven miles an hour.

Changing the location of the motor will sometimes have the effect of obtaining a slight increase in the speed of a boat, particularly if the stern is found to draw down too much. A speedy boat will never be found with the motor located in the extreme stern, and the majority of racing boats have their power plant placed in a compartment well forward. Consequently, by moving a heavy motor from the stern to the bow, the position at which the boat travels will be changed on account of the shifted weight, and in many instances the speed will be noticeably increased.

When an owner has made all changes imaginable in his boat in the endeavor to obtain more speed; when he has enlarged the power plant; when he has refined the lines of the hull until it seems to run

with scarcely a ripple; when he has tuned up his engine; when he has smoothed and scraped the planking and given it its coat of friction-reducing paint, there always remain the possible surprises to be found by putting on a new propeller. This is not a complicated or difficult operation, and yet sometimes it may be the most productive of results of any change imaginable.

The propeller, of course, does the actual work of driving the boat through the water and any fault in its design or unsuitability for that particular hull or motor will result in an absolute waste of power. It also acts as the regulator of the number of revolutions at which the motor will run when "opened wide," and as there is a certain normal speed at which any engine will operate at the highest efficiency, the size and pitch of the propeller play an important part in obtaining the best results from the power plant.

The propeller blades are really the development of a screw, and the pitch would correspond to the coarseness of the threads. The pitch of a propeller, however, is measured in inches, and is considered as the distance a point on the blade would travel in a line parallel to the shaft during one complete revolution of the wheel. In other words, the pitch is the distance that the propeller itself would travel during one revolution, in a line extending along its axis, if the movement were made in a medium in which there is no "give," or slip.

The greater the pitch of a propeller, then, the greater will be the resistance offered to its turning; but, within certain limits, if this increased resistance is overcome, the boat will be shoved a greater distance through the water at each revolution. Consequently, "easy" pitch and high revolutions would produce the same result as "heavy" pitch and slower speed of rotation—always within certain limits. The longer and wider the blade of a propeller, the greater will be the resistance to its revolution. The increased blade surface, however, will exert a greater thrust upon the hull with each revolution, and consequently a large wheel is "faster," for the same number of turns, than a small one.

There are four things to be considered, then, in connection with a propeller, as follows: Size, or diameter of the wheel; shape of the blades; pitch; and number of blades. The first and third of these considerations are regulated by the normal speed at which the motor will operate at its highest efficiency, always remembering that a wheel with too much pitch will work against itself and absorb power from the motor without delivering a corresponding increase in the speed of the boat.

Getting the Right "Pitch"

The problem of "too much pitch" will be better understood if it is remembered that "infinite pitch" would be represented by a wheel the blades of which were set at right angles to the plane of revolution, or parallel to the axis. The revolution of such a wheel would absorb power with no resultant motion in either forward or reverse direction. Three-bladed propellers are used on the majority of motor boats, so this is a problem that need not give the owner much concern.

For motors under three horsepower, however, it is advisable to use a wheel having but two blades, as any greater number would necessitate the construction of so small a propeller that efficient results could not be obtained without reducing the pitch to a very small degree. It is in the shape of the blades, then, that the greatest latitude of selection will be found, and here is ample opportunity for the trial of all manner of wheels.

Whether the blade should be long and tapering, thin at the hub and thick at the end, or of uniform width throughout the greater part of its length, is largely a matter of opinion; a certain shaped propeller that will give excellent results with one boat would be utterly unsuited to a craft of different proportions and character, even though the proper size of wheel should be selected. But, provided a well-designed wheel can be obtained, of approximately the proper pitch and of such a diameter that the motor will be held to its normal revolutions, the owner need not worry as to what results could be obtained with a

different propeller, for, except in the case of racing boats, it is not probable that any change would make a difference of more than five per cent in the speed of the craft.

Every propeller should be so placed that its entire periphery will at all times revolve well below the surface of the water. This is necessary in order that the propeller may have a solid body of water against which to exert its push. Unless this distance is at least six inches, in wheels of sixteen inches in diameter, and over, a vigorous whirlpool, or eddy, will be formed that will reduce the efficiency of the blades as they revolve past this point of disturbance.

Another reason for placing the propeller rather well below the surface of the water will be seen on a rough day when, if the wheel is not properly located, it will be uncovered with every wave and so reduce the resistance on the motor that the latter will be allowed to race at each forward lunge of the boat. This tendency will be overcome if the wheel is placed several feet forward of the extreme stern of the hull, but as high a speed or efficiency will not be obtained in this position as would be the case were the propeller located as far aft as possible.

When a boat is tested out for speed, the trial should always be made in a comparatively large body of water, for the full efficiency cannot be obtained in shallow or narrow streams on account of the drag of the following waves on the bottom or shores of the waterway. Even the fastest racer would not be able to travel more than ten or twelve miles an hour through a narrow canal, and at this speed it would "pull the whole river behind it."

Owing to the greater buoyancy of salt water, the speed of a boat in this medium is generally considered to be greater than that on inland lakes and rivers. This is true to a certain extent, but the difference is usually over-estimated, for it has been found by tests that the respective speeds are as 5.66 is to 5.5—an almost negligible proportion except in exceedingly fast racers.

The foregoing discussion regarding speed in motor boats is not intended to make any owner dissatisfied with the present performance of his craft, for that would be to sow the seeds of discontent. But there are many boats in use that, with a little refinement or change in equipment, will travel faster with the same expenditure of power, and if these details are attended to, a more efficient, as well as a more economical craft will be the result.

A HOMEMADE CASTING BAIT

BY GEORGE M. JOHNSON

MANY fishermen derive considerable satisfaction from making their own tackle, either wholly or in part. Perhaps they do this, not that there is any financial saving, or that the product is better than they can secure at the sporting goods store, but simply because they like to "tinker," and because of the pleasure of taking fish with implements evolved from their own skill. Thus it is that we find numerous amateur rod makers, who succeed in producing rods rivaling in excellence the expensive article, handmade by an expert, and many ambitious fly fishermen who put in their spare time during the closed season tying flies against the next summer's campaign.

With the rapidly growing popularity of the form of fishing commonly known as bait casting, a new field is opened up to the man who makes his own tackle. There is here unlimited opportunity for experimentation with various sorts of lures for bass, pickerel, or mascalonge, the fish for which bait casting is especially adapted, and the experimenter may hit upon some device which gives better results than anything on the market.

Another good feature of this branch of tackle manufacture is that it requires less skill with tools and far less outlay of time and material than the more difficult rod making. The tools needed are simple—a sharp knife, pliers, file, and hammer being all that are necessary. The material essential is wood, soft cork pine answering very well, as it is easy to work; wire, of various sizes and stiffness, and sheets of copper and aluminum for making spinners.

In addition, of course, one needs a collection of small swivels, split-rings, hook—single, double, or triple, as preferred, and bare or feathered—glass beads, etc., such as are used on all artificial baits, and a small supply of paints and varnish.

The most common casting bait, and one that is almost uniformly successful, is the wooden minnow. This may be made in all shapes and sizes, from the chunky "punkin seed" to the long slim pattern, may be in any color, plain or a combination, which the painter's fancy may suggest, and may swim close to the surface or be made to dive deeply, according to the amount of lead in its constitution.

The first thing is to shape out the minnow, using wood absolutely free from knots. Fig. 1 gives an idea of the appearance of the bait at this stage. The length of the body itself should be from three to five inches, depending somewhat upon the size of the fish expected. After working down with a knife, smooth with fine sandpaper. Be careful not to trim the bait down until it is so fragile that it might break under a heavy strain. If hard wood is used instead of cork pine care in this matter is not so important.

FIG. 1

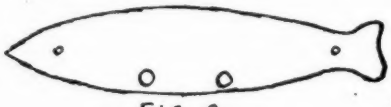


FIG. 2

The second stage is shown in Fig. 2. This is the same as Fig. 1 except for the four holes. In place of drilling these holes, thus running a risk of splitting the wood, a good plan is to burn them through with a red-hot wire. The hole at the head is for attaching the

spinners and swivel, the one at the tail is for the end hooks, while the two larger holes are to be plugged with lead to give the necessary weight.

If it is desired to sink the bait deep in the water, more and possibly larger holes may be required. Roll out a cylindrical piece of lead just the diameter of the hole, rest the minnow on a solid surface, and set the lead in place with a few light taps of a hammer. Then trim off any superfluous lead with a sharp knife. The amount of lead needed can be best determined by experiment, as it must be enough to overcome the buoyancy of the wood, and also depends upon whether the bait is designed for near surface or deep water

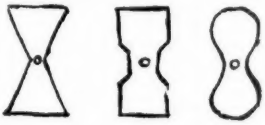


FIG. 3.

fishing. A bathtub full of water makes an excellent experimental station.

The next operation is to prepare the spinners. An idea, original with me, which I have never seen adapted in the wooden minnows on the market, is to have two spinners, revolving in opposite directions, at the head of the bait, instead of one at the head and another at the tail. These may be either of copper or aluminum in the natural color, or painted if desired. The metal should be about the thickness of ordinary pasteboard. Fig. 3 shows several patterns of spinners.

The two for the same bait should be of slightly different sizes—the forward one just a trifle smaller—and both with about the same degree of twist. Shape the spinners, and punch or drill

FIG. 4

the holes before giving the twist, taking care that the hole in each case coincides with the size of the wire upon which it is to spin, as, if the holes are too large, the spinners will interfere with each other's action unless set far apart.

Now bend into place the wires for the head and tail, as shown in Fig. 4.

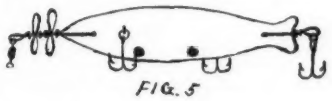


FIG. 5

Two staples, easily made from matting tacks or from stiff wire, are also shown in Fig. 4. It is a good plan to drive a light brad through the minnow's head in front of the wire, as shown by the dotted line, to prevent the wires pulling out. This, however, is a very remote possibility.

Fig. 5 shows the minnows completely rigged. The side hooks, of which two are plenty, are attached by means of split-rings and the staples mentioned above. These should be driven through the body and clinched on the other side. The illustration shows double hooks, but single or triple may be used.

Glass beads are employed on the head wire as seats for the spinners, and to keep them far enough apart not to hit. A variation of this arrangement is to put one spinner at the head and another

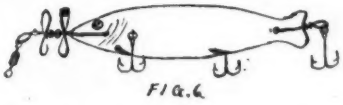


FIG. 6

at the tail, as is usually done with baits purchased at the store. Now it is important to test the bait in water to make sure that it assumes an upright position and sinks rapidly enough. If one of the spinners seems to cant the minnow to one side, give the other spinner slightly more twist; if that does not remedy the trouble add some more lead to the opposite side.

All is now complete but painting. Fig. 6 shows one very taking style. The eye is black and white, fins and gills are bright red, a black strip runs down the side, and the body is finished in dark silver. After painting, tone off with a coat of varnish.

I can vouch for the efficiency of such a bait as this one. The first time I tried

it I hooked and landed a black bass weighing five pounds and eight ounces, and I felt decidedly more gratified over that bass than if he had fallen victim to another bait in my kit, one that cost me a dollar.

Other combinations, aside from the wooden minnow, will suggest themselves to the inventive genius. I have put out some pretty weird contraptions in my research along this line, and their only excuse for existence is the undeniable fact that they catch fish. Whether game fish strike such baits from rage, hunger, or mere curiosity is a mystery; but, after all, the important thing is not why these unearthly devices prove their value, but the fact that they simply do.

NEW AIDS FOR THE MOTORIST

BY HAROLD WHITING SLAUSON

AUTOMOBILE accessories and necessities have, by this time, become fairly well standardized, and yet each season sees the introduction of new devices that make motoring simpler, more comfortable, and safer. This year has been no exception to the rule, and among the products of the two hundred and fifty different accessory exhibitors at recent automobile shows there were to be found numerous attachments that are certain to be of interest to the motorist. It would be impossible to mention all of these in detail without devoting an entire issue of this magazine to the subject, but a brief description of a few is certain to be of interest to the average owner of a car.

The chief objection that many people find to a gasoline motor is the fact that the majority of such power plants must be started by some outside force, and unless there happens to remain a good charge in the cylinders or a compressed air tank and equipment have been installed, the average engine must be cranked from the front of the car.

To avoid this necessity there are several mechanical devices designed whereby the engine may be started from the seat. Some of these starters have a lever placed near the driver's seat, connected to a shaft and sprocket, around the latter of which a chain passes to a similar sprocket fastened to the forward end of the crank shaft of the engine. A ratchet and tube, in the latter of which is cut a spiral slot, give the proper rotary motion to the first sprocket when the lever is pulled, and the motor may thus be turned over as many times as desired.

Instead of obtaining the starting power by hand, another device stores energy from the motor by means of a coil spring which is wound up as soon as the engine begins to run. By pressing a button on the steering wheel, the spring is released and engages a ratchet on the end of the crank shaft. This serves to turn the crank shaft over, even against the highest compression, and enough energy is stored in the spring to impart several revolutions to the fly-wheel. If the motor is in good condition, it will be running under its own power after two or three revolutions have been given to it, and the spring will then be rewound automatically.

Another novel device that saves the use of the hands is a metal signal attached to the outside end of the driver's seat. In all cities and towns, and, in fact, on all highways where traffic is at all heavy, a warning should always be given by the driver of a vehicle if he is to slow down, stop, or turn off the road. This is customarily done by extending the hand in a horizontal position beyond the body of the car, but the necessary hand is sometimes actively engaged in shifting gears or applying the emergency

brake, and in this contingency the driver is lucky if a rear-end collision does not follow his lack of a third hand.

In its normal position, the signal referred to above remains enclosed in a case that extends vertically from the side of the seat. By moving the knee so as to press a lever connected to the signal arm, the latter opens out like a jackknife and the word "stop" appears in white letters on a red ground. The arm will be returned to its original position by pulling a cord near the base of the support. The pivot is connected with a switch by means of which an electric light that will serve to illuminate the warning at night may be operated automatically.

A wind shield is a valuable addition to the car for running in cold or stormy weather, and yet every automobile driver knows how even a light mist will render the glass so nearly opaque that it is impossible to see the road ahead. Under these conditions, running is made very dangerous unless the outside of the shield is wiped frequently. In order to enable this to be done by the driver at the same time that he is operating the car, a simple appliance has been designed that can be attached easily to any wind shield.

This consists of a metal arm in which is inserted a rubber strip. The arm is pivoted at its upper end in a small case that is attached by a couple of screws to any part of the top of the wind shield. A spring in the pivot case holds the arm in a horizontal position against the upper edge of the shield, but by pulling a cord, this arm, with the rubber strip in contact with the glass, is swept around in a semi-circle that clears the surface of rain and dirt. When the cord is released, the arm flies back and automatically cleans itself by the momentum of the particles of rain and dirt that may have been collected.

Night driving seems to be becoming more and more a popular feature of automobiling, to judge by the number of headlight and searchlight accessories to be found. By the use of one of these, the acetylene lamps may be lighted by turning on the gas and pulling a knob on the dash of the car. This knob is connected to an electric sparker placed over the burner in each light, and the gas is ignited by means of the arc formed when the contact of the two portions is broken.

Municipal ordinances in many cities prohibit the use of blinding or glaring headlights, and as the ordinary automobile acetylene lamp comes within this ban under normal conditions, any device which serves to reduce the undesirable brightness will be welcomed by many motorists. One such device consists of a double valve operated by a key from the driver's seat, and by means of it a high or low flame may be obtained, as desired.

Turning Down the Light

By turning the key to a low position, the light will be reduced to the proper flame with no attendant adjustment necessary and the car may be run without violating the city ordinance. The light may also be turned to the high point merely by moving the key to the proper stop, and the necessity of readjustment at the tank valve is then eliminated.

Another appliance that reduces the intensity of the light, although it does not lower the flame, consists of a small, dull, metal disc that can be moved to a position directly behind the acetylene burner by pulling a chain that hangs down from the lamp. Inasmuch as the intensity of an acetylene light is largely due to a bright reflector, this disc interposing itself between the flame and its reflector reduces the glare from the lamps as effectually as though the gas had been turned down.

Still a third help for the motorist who drives at night is found in a device by means of which one of the acetylene headlights may be turned independently of the body of the car. By the action of a series of rods and levers, this light is made to swing with the front wheels, so that a bend in the road around which the car will turn will be illuminated before the rays from the other lamp would be able to reach this portion of the highway.

The owner who suspects that his ma-

chine is being used without his permission may keep an accurate tab on the movements of his car by the use of a compact little mileage recorder that replaces the hub cap of one of the front wheels. This odometer is not much larger than the ordinary hub cap and is held in position by means of a set screw that cannot be moved without breaking a seal. Thus any tampering with the adjustment would be easily detected, and as the instrument adds mileage for backward as well as forward revolutions of the wheel, distances cannot be deducted from the total and the car cannot be moved without the owner's knowledge.

Practically every nut on an automobile is so located that a complete turn cannot be made by any wrench, and unless a ratchet handle is used, the tool must be removed after each half or quarter turn, as the case may be. A unique "end" wrench is now made, however, that, although it has a solid handle and fixed jaws, nevertheless permits of a ratchet action when applied to a nut. This is obtained by so shaping one jaw that the wrench will slip around the nut on the idle stroke and yet grip it firmly on the return. A simple notch and curve on the one jaw effect this action, and by turning the wrench over the idle stroke will be reversed and the nut will be screwed in the opposite direction.

Thefts of automobiles are by no means uncommon, and to guard against this, a lock has been devised which will effectively hold the emergency brake lever in any position desired. This consists of a padlock into which is inserted a steel shackle having notches cut in one end. This shackle is placed around the brake lever segment with the sharpened recess of its outer portion fitting in the notch of the segment of the sector adjacent to the one in which it is desired to hold the brake lever.

The padlock is then pushed over the shackle as far it will go and catches in one of its notches, from which it cannot be removed without the use of the proper key. Thus the lock and shackle are securely held in position on the segment, and if the brake lever is moved, the thrust is taken up by the end of the shackle and a hardened steel lip on the lock that serves to relieve the mechanism from all strain.

THE WORLD OF SPORT

THAT GOLF TANGLE

A NEW American Revolution has been accomplished, if we are to believe the interpretation placed in some quarters on the refusal of the United States Golf Association to adopt the ruling of the Royal and Ancient Club of St. Andrews on the form and make of putters! Too long have we been ground under the perfidious British heel! Too slavishly have we followed rulings in whose making we had no share! Too long have we followed the Royal and Ancient banner without knowing whither it led or why!

At most we have been allowed an occasional suggestion which dropped silently into the cavernous depths of the Royal and Ancient Rules of Golf Committee. Now we have declared our independence—or we think we have—and can go it alone. Unfortunately we have not learned wisdom from an old political experience of other days.

Revolution means national freedom, but does it also imply freedom of any one or more of the "revoluting" units to secede from the new national compact? In other words, how long before the Western Golf Association, or the Ohio Golf Association, or the Genesee Valley Golf Association, or some other sovereign unit will put in practice that which it has learned from the experience of the national body? Where is secession to stop?

All this, of course, is mere conjecture and of correspondingly slight value, save as it may serve to point out the danger of beginning a process of disunion and decodifying.

The revolution began in this wise: Last spring the Rules of Golf Committee of the R. and A. notified the members of the committee that the question of mallet-headed clubs would be submitted to the club at the next meeting. At that meeting, held in May, a motion was passed empowering the committee to add to the clause on form and make of clubs a declaration that all clubs having heads of the mallet type are a "substantial departure from the traditional and accepted form and make of golf clubs." An amendment specifically excluding the Schenectady putter from this embargo was defeated.

Then at the autumn meeting of the Royal and Ancient the change proposed by the Rules of Golf Committee was approved. Here are the revised clauses governing the form and make of clubs: "The Rules of Golf Committee intimates that it will not sanction any substantial departure from the traditional and accepted form and make of golf clubs, which, in its opinion, consists of a plain shaft and a head which does not contain any mechanical contrivances, such as springs; it also regards as illegal the use of such clubs as those of the mallet-headed type or such clubs as have the neck so bent as to produce a similar effect."

This note is appended: "'The Rules of Golf Committee intimates that the following general considerations will guide it in interpreting this rule:

"(1) The head of a golf club shall be so constructed that the length of the head from the back of the heel to the toe shall be greater than the breadth from the face to the back of the head.

"(2) The shaft shall be fixed at the heel, or to a neck, socket, or hose which terminates at the heel.

"(3) The lower part of the shaft shall, if produced, meet the heel of the club, or (as, for example, in the case of the Park and Fairlie clubs) a point opposite the heel, either to right or left, when the club is soled in the ordinary position for play."

This is the ruling which the United States Golf Association has now rejected, after much discussion, most of it beside the point. The real question at issue seems to us to lie deeper than the use of any particular club. The devotees of the Schenectady might or not putt as well with another club. The inventive genius of followers of the game may or may not be curbed by this ruling.

Our pride of independence may be somewhat ruffled and our ideas of the scope and usefulness of the activities of rule makers may be uncomplimentary to the efforts of the Royal and Ancient. Nevertheless the rule could have been adopted without great sacrifice on our part and conceivably without handing ourselves over bound hand and foot to the great god precedent.

The whole question is one of the desirable extent and character of the process of codifying the rules of the game. This implies also the question of international uniformity. This does not exist now in all particulars. Possibly it will never exist. That it is highly desirable cannot be denied.

The further question of the fairness of St. Andrews rulings has been raised and it has been suggested that this particular decision was caused in part by a desire to make trouble for American golfers. This is absurd on the face of it. It is difficult also to see the full force of the argument against standardization. Of course, standardization of a positive sort would always be undesirable. But this has not been attempted.

To say that clubs shall *not* be of a certain specified character is not to say that they *shall* be of a certain other sort. The use of a billiard cue on the putting green, for example, was prohibited some time since, the question having come through the attempted use of such an implement. A small croquet mallet also came under the ban in the same way. The whole object should be to keep the game as free as possible from freak clubs.

As to the general question of the proper American attitude toward St. Andrews we submit that something has been lacking in the present controversy. The evil—if evil there be—can never be cured by denunciation and suspicion. It would have been far better to have accepted the St. Andrews ruling, even at the risk of some sacrifice of national pride and desire, than to have created a breach between the countries.

The cure lies not in rejecting the Royal and Ancient, root and branch, but in working quietly and reasonably toward making it comprehensive and representative. An international legislature is perhaps too much to hope for, but a Hague tribunal of golf should not be an impossible dream.

CHARLIE BARR, ABLE SEAMAN

WHEN Captain Barr's life came to an end last January there passed from the world one of the great geniuses of the sea. Three times he sailed the defender in the *America's* cup races, twice in the *Columbia* and once—the last—in the *Reliance*. The fate of the three *Shamrocks* is familiar history, and no small part of the American victory was due to Captain Barr.

Wherever he went victory attended him. In the Trans-Atlantic race in 1905 he sailed the *Atlantic* and won by a long lead. In him courage and sound sailing sense were unusually combined. In the Trans-Atlantic he pushed ahead under reefed mainsail when the crew murmured that it would be better to lay to. Barr's judgment as to what the yacht could do was amply justified. His last boat was the *Westward*, and not a boat of her own class in European waters came near her in her triumphant career last summer.

Captain Barr was Scotch by birth and his early training was in British waters, but his greatest work was done on this side, and his name will be linked imper-

ishably with the great achievements of American boats. None excelled him in judgment and cool daring, and in addition he had what was almost a sixth sense of the boat he was sailing. Where other men—good men, too—wondered and guessed and ventured, Barr knew and did. And he was a good sportsman too—one who knew and abided by the spirit and letter of the rules of racing. There will be other great skippers before the last race is sailed, but it is impossible to conceive of a greater one than Charlie Barr.

FLYING RULES UNCERTAIN

APPARENTLY there is little immediate prospect of a definite settlement of the dispute over the award of the Statue of Liberty flight prize at the Belmont Park meet last October. The Royal Aero Club of Great Britain has presented its protest to the International Aeronautic Federation in behalf of Grahame-White, alleging as its ground the revocation of the rule requiring one continuous hour in flight before starting as a qualification. Grahame-Wright was the only aviator to comply with this requirement, Moisant lacking a minute or two of the full hour.

The Aero Club of America replies in substance that the revocation had been approved by the contest committee and acknowledged by all the aviators, justifying it further on the ground that the Aviation Committee had reserved the right in advance to make such changes as might seem necessary to meet emergencies in any and all contests. The emergency in the present case was that Grahame-Wright alone had qualified and that the committee had been given to understand that he did not intend to start in the Statue of Liberty flight.

Furthermore the tyros for whom the greatest danger had been anticipated in such a contest had practically dropped out of sight in the meet and none but skilled flyers were participating. Therefore there was no reason for requiring the hour-in-flight qualification as proof of a man's ability to handle his machine. The International Aeronautic Federation has decided that the changes referred to were not made in accordance with the statutes of the Federation and has referred the question back to the Aero Club of America for a new classification.

There the matter rests. Meanwhile there has been much criticism of Grahame-White's share in the matter. With this we are hardly in sympathy. It is easy enough to denounce him as a poor loser, and perhaps he is. It would have been a fine example of good sportsmanship if he had waived any right to a protest that he might have thought he had.

As a matter of fact, however, just at this stage of the flying game a few protests now and then will help wonderfully toward clearing up the whole question of the powers and provinces of contest committees, judges, and aero clubs. The most desirable thing is that we keep our heads and refrain from rash criticism and careless talk about poor losers and bad sports.

THE NORTH POLE IN CONGRESS

TO the outside observer the examination of Commander Peary before a Congressional committee seems the climax of absurdity. Two computers of the Coast and Geodetic Survey have worked over Peary's records independently and have reached the conclusion that the explorer's observations at Camp Morris K. Jesup show that he was then within a mile and six-tenths of the pole. No evidence of inaccuracy or inconsistency appeared in the observations, even to their trained minds.

Still members of the Congressional committee are doubtful and are determined to have the truth at all costs—the principal cost being general disgust at the sight of so important a matter being treated in such a heckling, unworthy, and generally footless manner.

One member considers it a very suspicious circumstance that Peary should have taken Henson and two Eskimos with him to the Pole and not Captain Bartlett. Another member viewed with distrust the fact that the book in which

the record of observations was kept was not as soiled as his knowledge of Arctic conditions led him to believe it should be. The same member considered that the explorer had erred in not confiding his discovery to Mr. Harry Whitney at Annootok.

It would be interesting to know what these gentlemen expect to discover by such a cross-examination on a subject of which we submit—with all due deference—they know and can know nothing. If the records stand the acid test of scientific scrutiny and comparison there is nothing more to be said.

ONE WAY TO PRESERVE THE GAME

WE have received the following letter from a reader in Sullivan County, N. Y., and offer it here as a contribution to the general discussion of the problems of game preservation and the best methods controlling the man with the gun. Our correspondent says:

"Noting your article on The Native and the Game, I have been much impressed with it. I have lived here over six years and in that time have done all in my power to protect the game, which includes deer, occasional bear, grouse, woodcock, and in September and October numbers of wild duck, mostly teal. We are in the town of Forestburg, altitude varies from 1,200 to 1,600 feet, mostly wooded lands, beautiful scenery, many lakes and streams, and some game preserves containing thousands of acres. I have a small place of 400 acres which is solely for my friends' use, so I have no ax to grind.

"It seems to me (while some of what you say of the native is true) that what is most wanted here is the dollars of the thoroughbred sportsmen. Let them come here and lease year after year the farms of 100 or 160 acres. They can do this for $75 to $100 and an extra charge of $2 a day for board, good board and bed. In the deer season I venture to assert that three or four game sportsmen can have all the shooting and enjoyment they desire with little or no roughing. On my own place we take six or eight deer each season, every man his two, and the same can be done on the smaller places.

"If the farmer is encouraged as I have above stated he will see that there is no poaching on his premises. The native is disgusted with so-called sports from the small towns in the country who don't know which end of a gun to shoot from and who want the privilege of hunting and board for a dollar a day.

"Another great cause of poaching is the bewhiskered individual who keeps a so-called resort for so-called sportsmen. A deer or grouse would be ashamed to be found on his place, but he is careful to advertise the fact that thirty or forty deer have been taken within a radius of half a mile of his resort. He usually has from fifteen to twenty sports at a dollar a day and he turns them loose on his neighbors.

"We had another Harry Haff (THE OUTING MAGAZINE, December, 1910), but for some reason he was recently dismissed. A better man could not have been found for the position."

THE ESSENCE OF SPORT

PROBABLY no question is asked more often of sportsmen, explorers, aeronauts, and other men who court pleasure that holds in it the thrill of risk than this, What's the use of it? In most cases there is no adequate answer to people whose state of mind permits the propounding of such a question. It is largely a question of temperament.

If you find your higher pleasure in a comfortable seat by a warm fire with good company or a pipe and a book, none can gainsay your right to cling to it and to question the superiority of the thrill of action to the more passive delights of quiet contemplation. But something high and fine will have gone out of the world if the time ever comes when men cease to respond to the lure of danger and uncertainty. The strenuous life is an overworked and in many mouths a meaningless phrase, but it expresses nevertheless a natural habit of

life and state of mind for many worthy men and women.

Anthony Trollope, busy writer and government servant as he was, rode to hounds for many years with a zest and persistency superior to that of many men whose opportunities were far greater. For many years the keeping of horses spelled economy in other directions that was hard for him to effect. Often, as he says in his autobiography, a day's sport meant a railway journey of twenty-odd miles and a long ride to the meet.

There were many other calls on his time and pocketbook, but scarcely a week passed during the hunting season when he did not take part in his favorite sport if he was in reach of hunting country. In his autobiography he has left a record of his attitude toward hunting that, despite his own inability to explain his enjoyment of the game, is still an admirable statement of the true inwardness of good sport and its lure for the healthy in mind and body. He says:

"The cause of my delight in the amusement I have never been able to analyze to my own satisfaction. In the first place, even now, I know very little about hunting—though I know very much of the accessories of the field. I am too blind to see hounds turning, and cannot therefore tell whether the fox has gone this way or that. Indeed, all the notice I take of hounds is not to ride over them.

"My eyes are so constituted that I can never see the nature of a fence. I either follow some one, or ride at it with the full conviction that I may be going into a horse-pond or a gravel-pit. I have jumped into both one and the other. I am very heavy and have never ridden expensive horses. I am also old now for such work, being so stiff that I cannot get onto my horse without the aid of a block or a bank.

"But I ride still after the same fashion, with a boy's energy, determined to get ahead if it may possibly be done, hating the roads, despising young men who ride them, and with a feeling that life cannot, with all her riches, have given me anything better than when I have gone through a long run to the finish, keeping a place, not of glory, but of credit, among my juniors."

The last sentence is a fit creed for any good sportsman.

DEER IN MAINE

UNFORTUNATELY we did not receive a report on the deer situation from the Maine game commissioner in time to include it with the other summaries published in our February number. Nevertheless, in view of the importance of Maine as a hunting State it is worth presenting by itself. The commissioner writes that during the last hunting season there were shipped out of Maine by rail 7,963 deer, 225 moose, and 34 bears. Three railroads reported killed but not shipped over their lines 1,959 deer, 93 moose, and 36 bears.

Many hunting parties entered the State by automobile last fall and doubtless many of the latter list went out by the automobile route. Licensed dealers in deer skins reported 9,567 deer skins purchased during the 1910 season. As to licenses 2,105 were issued to non-residents after October 1st. One hundred and thirty holders of $5 licenses paid the $10 additional and exchanged them for the big game licenses. The full report of licenses issued has not yet been made.

Maine limits each hunter to two deer during the season. It would be interesting to know the relation of deer actually killed to the number of licenses issued, resident and non-resident.

NEWS OF THE OUTDOOR WORLD

Aviation

ON December 30th John B. Moisant and Arch Hoxsey, of America, and Lieut. Caumont, of France, were killed falling with their aeroplanes. Moisant fell near New Orleans and Hoxsey at Los Angeles.

Maurice Tabuteau, contesting for the Michelin cup, broke the world's aviation record for distance, covering 362.66 miles in a continuous flight of 7 hours, 45 minutes, at Buc, France, December 30th.

Philip O. Parmelee in a Wright biplane made a new American endurance record at San Francisco, January 22d. He stayed up 3 hours, 39 minutes and 49⅘ seconds.

Glenn H. Curtiss became permanent owner of the *Scientific American* Aeroplane Cup with the close of the year 1910. The conditions of the offer call for the longest cross-country flights in America, and Curtiss won the cup three consecutive years.

A bill was introduced in the General Assembly of Connecticut in January requiring the registration of flying machines, with a fee of ten dollars.

A new aeronautical body has been organized in England, to be called the British Aviators' Federation.

Henri Weymann flew from Chalons, France, January 17th, carrying two passengers.

Eugene B. Ely flew thirteen miles over water, landed on the cruiser *Pennsylvania*, and then returned to the starting point near San Francisco, January 18th.

Glenn H. Curtiss, in a biplane equipped with hydroplanes, rose from the waters of San Diego Bay, flew two miles, and alighted on the water at the starting point, on January 26th. He is the first aviator to do this successfully.

Roger Sommer flew with six passengers besides himself from Douzy to Romilly, France, and return, a distance of thirteen miles, on January 26th. This breaks all records for passenger carrying.

J. A. D. McCurdy flew ninety-six miles from Key West to a point about ten miles from Havana, January 30th. Owing to a leak in the oil tank, he was obliged to descend on the water, where he was picked up by the cruiser *Terry*. This is a record for cross-country flight in America and a world's record for over-sea flight.

Hockey

FOLLOWING are the results of some of the principal hockey games played during January: McGill University, 5—Harvard, 2; Princeton, 2—Columbia, 0; McGill University, 3—Crescent Athletic Club, 2; Cornell, 4—Princeton, 2; Yale, 7—Dartmouth, 2; Harvard, 5—Columbia, 0; Dartmouth, 6—Princeton, 3; Columbia, 3—Dartmouth, 2; Amherst, 2—West Point, 0; Cornell, 4—Yale, 2; Harvard, 5—Princeton, 1; Amherst, 2—Williams, 0; Columbia, 6—Yale, 4; Cornell, 13—Western Reserve, 0; Massachusetts Institute Technology, 3—Dartmouth, 1; Cornell, 4—Yale, 3; Cornell, 3—Yale, 1; Cornell, 4—Yale, 2; Yale, 19—University of Rochester, 18; Harvard, 12—Springfield Training School, 0; Cornell, 5—Case, 1; Yale, 1—Princeton, 0; Cornell, 3—Harvard, 2.

Basketball

FOLLOWING are the results of some of the principal basketball games played during January: St. John's College, 31—Yale, 20; Wesleyan, 38—Manhattan College, 23; New York University, 29—Georgetown, 18; St. Lawrence University, 31—Syracuse, 17; New York University, 26—Naval Academy, 24; Columbia, 20—Cornell, 16; Union College, 14—West Point, 13; Yale, 17—Trinity, 13; West Point, 34—Princeton, 14; Cornell, 34—Dartmouth, 18; New York University, 20—Wesleyan, 14; Colgate, 24—Dartmouth, 18; Columbia, 29

—Wesleyan, 13; Naval Academy, 32—University of Pennsylvania, 23; Columbia, 36—Princeton, 13; Columbia, 23—Princeton, 12; Swarthmore, 30—West Point, 27; Cornell, 27—Princeton, 19; Columbia, 33—Cornell, 19; New York University, 38—Trinity, 11; Naval Academy, 31—Lehigh, 24; University of Pennsylvania, 36—St. John's College, 14; University of Pennsylvania, 26—New York University, 16; West Point, 22—Yale, 21.

Miscellaneous

THE Portland Revolver Club broke the world's record for a five-man team event at twenty yards at Portland, Ore., January 23d. The total was 1,129, each contestant shooting five times.

Thomas A. Barry has been chosen head coach of athletics for the University of Denver.

Miss Frances A. Perry, of Brookline, is the champion athlete of Radcliffe College. She is on the Varsity basketball team and manager of next season's baseball nine.

Edmund Lamy won the half-mile and mile races at the International Amateur Skating Tournament at Saranac Lake, January 25th, and the three-mile on the following day. He was afterwards suspended for the rest of the racing season for refusing to abide by the referee's decision ordering the final heat of the half-mile restarted.

Edward L. Rickson won the half-mile, mile, and two-mile races at the Seventh Annual New England Skating Championship held at Springfield, Mass., January 25th.

Barney Oldfield broke the Pacific Coast one-mile track record at Los Angeles, January 8th. His time was 51⅕ seconds.

C. G. Westcott, of Leesburg, Fla., won the 200-target sweepstakes at the annual mid-winter handicap trap-shooting tournament held at Pinehurst, N. C., January 18th. His score was 184.

Robert T. Fisher has been elected captain of the Harvard football team for 1911.

William Bennett's ice boat, *Russell B*, a Class A boat, broke the record for the 12-mile course at Red Bank, N. J., January 11th. Her time was 21 minutes.

Hans Holmer won the professional Marathon race, 26 miles, 385 yards, at Edinburgh, Scotland, January 3d. His time was 2:32:21, a record for the distance.

Following are the highest percentages, as announced by the Interstate Association for the Encouragement of Trapshooting, season of 1910. The averages are based on a minimum of 2,000 targets shot at under the association's ruling: J. S. Day, Midland, Tex., .9728; F. S. Wright, S. Wales, N. Y., .9620; J. R. Graham, Ingleside, Ill., .9582; C. M. Powers, Decatur, Ill., .9580; Nick Arie, Fort Worth, Tex., .9580; I. Galbraith, Tompsonville, Ill., .9528; Bart Lewis, Auburn, Ill., .9507; C. E. Mink, Laurel Springs, N. J., .9452; R. A. King, Delta, Colo., .9448; H. P. Herrman, Philadelphia, Pa., .9436; G. E. Painter, Pittsburg, Pa., .9407.

Moneche, a setter owned by J. M. Avent, of Hickory Valley, Tenn., won first honors in the All-Age Stake of the United States field trials completed January 19th, at Rogers Springs, Tenn.

W. R. Crosby, of Ofallon, Ill., retained his title as world's champion trapshooter by defeating Lester German, of Aberdeen, Md., at Chicago, January 14th.

Following is the standing of the three best teams in the six-day bicycle race completed at Buffalo, N. Y., January 14th: Clarke-Pye, 1,251.7; Hehir-Goulett, 1,251.7; Lawson-Root, 1,251.7. In the final mile ride-off Clarke won.

The United States Golf Association at its annual meeting held at Chicago, January 14th, adopted a resolution failing to uphold the ban against the center shafter putter known as the Schenectady.

F. A. Martin, of Ekwanok, won the President's trophy in the eighth annual mid-winter golf tournament at Pinehurst, N. C., January 11th.

A. V. Clough, of Columbia University, won the fencing tournament at the New York Athletic Club, January 23d, for the pair of foils offered by Dr. Graeme Hammond.

Edmund Lamy, of Saranac, N. Y., won the 220-yard championship skating race, the quarter-mile international race, half-mile championship race, mile race, two-mile race, and three-mile scramble race at the International amateur indoor speed-skating championship races held at Chicago, January 16th and 17th.

P. Lorillard, Jr., defeated H. O. Brokaw in the final round for the annual second-class racquet handicap at Tuxedo Park, N. Y., January 8th.

George R. Fearing, Jr., and H. D. Scott, of Boston, won the National racquet doubles championship for 1911 from Payne Whitney and M. Barger, of New York, at Boston, January 22d.

Louis A. Hamilton, of Englewood, won the President's Trophy in the final round of the eighth annual advertising men's golf tournament at Pinehurst, N. C., January 14th.

Jack Donaldson, of South Africa, ran 150 yards in 14 seconds at Kimberley, Cape Colony, January 21st. This is a new world's record.

Charles M. Daniels, of the New York Athletic Club, won the metropolitan swimming championship in New York, January 22d. He also won the Metropolitan Amateur Athletic Union championship 220-yard swim on January 14th.

Banner Prince Charming, owned by Mrs. Frank Smyth, was adjudged the best dog in the show of the American Pomeranian Club held in New York early in January.

Al Shrubb beat Tom Longboat in a fifteen-mile race at Pittsburgh, Pa., January 10th. His time was 1 hour, 20 minutes and ⅘ seconds.

Ty Cobb scored 106 runs in the season of 1910. He was the only player in the American League to score more than 100 runs.

The National League's official records show that the Giants struck out less than any other team for the season of 1910, fanning 489 times in 155 games.

August Herrmann, of Cincinnati, has been elected Chairman of the National Baseball Commission, and John E. Bruce, Secretary.

The Harvard Law School's all-star football team played a no-score tie game with the Louisiana State University team at Baton Rouge, La., January 2d.

The reports of the treasurer of the Athletic Association of Princeton show that the football receipts for 1910 were $42,588.69, with disbursements leaving a balance of $16,838.97.

George K. Kouwenhoven won the third annual clay-bird shooting championship of Long Island Sound, January 28th.

Francis Kempe, of Red Wing, Minn., won the first prize in the tournament of the National Ski Association at Chippewa Falls, Wis., January 29th.

Two new world's records were made at the International Skating Union races held at Boston, January 31st. Fred J. Robson skated 220 yards in 18 seconds. High jump, flying start, William H. Quinn, 4 feet 3 inches.

Shooting at the sixth annual tournament of the Indoor Twenty-two Calibre Rifle League of the United States, Dr. W. G. Hudson, New York, established a new world's record in the 100-shot championship at twenty-five yards, January 31st. On a quarter-inch ring target he scored 2,482 points out of a possible 2,500, as against 2,481 made by Col. W. A. Tewes in 1906.

Eugene N., setter, owned by Frank Reilly, Boston, won the national all-age championship in the field trials at Rogers Springs, Tenn., January 30th.